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LECTURES.

LECTURES ON INTRACRANIAL SURGERY.

VI—BRAIN TUMOR AND ITS SURGICAL TREATMENT.

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Continuing the discussion of brain tumor and its surgical treatment, I will first speak of the

Symptoms of Cerebellar Tumor.—Tumor of the cerebellum may give rise to no characteristic symptoms whatever. Loomis has reported a case in which there was simply a low grade of fever; yet the post-mortem examination revealed a cerebellar tumor as large as an orange. Commonly, however, there are marked symptoms—sometimes so pronounced as to make localization absolutely certain: vomiting with occipital headache and general failure of health, without other discoverable cause, will almost certainly call attention to the proper region; besides, as the tumor grows, pressure symptoms arise. They are thus enumerated by Wood: "Encroachment on the medulla may lead to imperfect hemiplegia or even to great motor failure; or hypoglossal, or facial, or other local paralysis may result from the pressure exerted by the enlarged cerebellar hemisphere upon nerve trunks. If the trigeminus be involved a true anesthesia dolorosa may be produced; loss of power of swallowing may be a prominent symptom. On account of proximity to the sight centers, blindness from pressure is not an infrequent result of cerebellar tumors." When the lesion occupies the middle lobe of the cerebellum it causes peculiar disturbances of motion called cerebellar titubation. This was typically illustrated in a case that came under my observation in 1890:

Annie Buford, colored, 19 years of age, for many weeks presented these symptoms: occipital headache, vertigo, vomiting, tenderness over the right occipital region and cerebellar ataxia; reflexes normal; her general condition was excellent, but she became somewhat thin on account of persistent vomiting; late in the history, choked disc was prominent; cerebellar titubation was marked—she could only stand with feet widely separated, as when brought close together she would sway and fall to the floor unless caught, but closing the eyes did not cause any increase of the tendency to fall; in walking she could not turn quickly, and there was a constant inclination to fall to the right; but when lying on her back she had perfect control of the lower extremities. Tumor of the middle lobe of the cerebellum was diagnosticated and operation urged. It was refused persistently. One day while washing dishes she suddenly fell to the floor unconscious and died in a few moments. The autopsy (by Dr. J. B. Jones and myself) confirmed the accuracy of the diagnosis; the tumor was nearly as large as a hen's egg and extended—at the time of death—to the fourth ventricle; so operation during the last few weeks of life would have proved fatal, though doubtless early extirpation might have been possible. Microscopic examination showed the growth to be tubercular in character.

The cerebellar titubation is ordinarily accompanied by giddiness. The attitude is that of a tabetic person; the feet held forward and well separated. When they are brought together there is present a singular movement of flexion and extension in the feet, while the body begins to sway, and a fall to the floor follows unless some assistance is afforded. Sometimes these movements are in one direction, but more frequently they are irregular; often the patient can not turn suddenly, so the walk resembles that of a person intoxicated. Festination is rarely a symptom. When in bed the patient can use the legs as perfectly as ever. Nothnagel has clearly proved that this titubation invariably means disease of the middle lobe of the cerebellum. When the cerebellar peduncles are implicated, rotatory movements appear.

Rosenthal enumerates the diagnostic points of tumor of the cerebellar peduncles as headache, vertigo, disorders of the special senses, unsteady gait with tendency to fall upon the side, and partial rotation around the vertical axis.

DIAGNOSIS.

After a careful study of the symptoms of cerebral and cerebellar growths, as I have given them, there should be little difficulty in making a correct diagnosis. The only diseases with which brain tumor can be confounded are cerebral or cerebellar abscess, cerebral thrombosis, meningitis (chronic forms), lead poisoning, hysteria and paretic dementia. A chronic basilar meningitis is particularly misleading. The essential features of each of these diseases and the points of differential diagnosis may be found in any good work upon diseases of the nervous system. For deciding the location of the lesion, the symptoms already mentioned, coupled with the subjects to be considered later under the head of cerebral localization will suffice.

OPERATION.

It having been determined that the growth is so situated as to admit of excision, the steps to be followed are these: after proper preparation, a flap of scalp and periosteum at least three inches broad is turned back from the area to be opened. The trephine is applied and a button removed, or a small opening made with a gouge or chisel; this opening is enlarged until it is at least one and one-half by two inches, with cutting forceps, and the dura inspected while bleeding is being checked. The dura is opened by a flap slightly smaller than the hole in the bone, and the brain exposed and examined; especially by palpation, to decide as to the location of the tumor if not at once visible. When the situation of the growth has been exactly determined, operative procedures may be resumed.

The pia may be carefully raised with the vessels of the brain, the latter slipping out of the sulci without serious rupture in most localities. Then the tumor may be removed either with a very thin sharp knife, or curetted away with a Volkmann's spoon; in case of tubercle or other soft tumor the latter is prob-

ably the better method. Extreme care must be taken to remove all diseased tissue; which is particularly important of malignant neoplasms. Quite often the growth may be readily enucleated—shelled out from the surrounding brain substance, the fibers of which have been simply pushed asunder with no infiltration; in which instance the operation is comparatively simple. But when the normal tissues are intimately mixed with the diseased structures there is frequently great difficulty, and the surgeon is compelled to cut at considerable distance from the center of the tumor—if so, as much gray matter should be preserved as possible, the cut slanting inward around the mass to be removeed.

When extirpation is completed, a roll of iodoform gauze, wrung from very hot water, is placed in the wound, with firm pressure, to control hemorrhage. By making pressure with these hot balls of gauze for about five minutes all capillary hemorrhage can be checked—a method of hemostasis much to be preferred to the Paquelin cautery which is sometimes used. It is sometimes necessary to ligate bleeding vessels too large to be controlled by heat and pressure, especially if the cut has extended down near to or into the lateral ventricle. If—as sometimes has happened in the past—it is found that the bleeding continues in spite of these efforts, there remains but the alternative of packing (as firmly as dared) with iodoform gauze.

As soon as bleeding has been checked the wound is irrigated with hot normal salt solution (temperature 110 degrees) and dried, a plenty of iodoform dusted in, the pia and vessels gently replaced and the dura sewed with fine catgut; with or without catgut drainage as may be indicated—without it by all means if possible. A few strands of catgut are laid to the dura and allowed to project through the scalp at the lower end of the incision. The scalp is finally closed with continuous catgut suture and the usual dressings applied.

If the Paquelin cautery is brought into use to control hemorrhage, the wound must be drained for some four or six days. When the wound has to be packed with iodoform gauze for hemostatic purposes the tampon must be removed with the utmost gentleness and under the most scrupulous antiseptic precautions at the end of thirty-six to forty-eight hours. After its removal the patient must be kept absolutely quiet for forty-eight hours longer or bleeding may be caused to return.[1]

When a cystic tumor is the variety found, the cyst should be extirpated entire if possible. The most extreme care is required in pushing away the fibers next to the tumor. If, in spite of all precaution, the cyst ruptures, the wound must be immediately and thoroughly irrigated and then the sac of the tumor carefully dissected out to prevent recurrence; this not being possible, it is best to gently curette the remaining cyst wall and insert a drainage tube, as very good results may be thus obtained.

All incisions in the white substance should be made parallel with the fibers of the corona radiata—that is practically perpendicular to the lateral ventricle—or as nearly so as practicable.

Exploratory puncture may be made in various directions to ascertain the presence of any hard mass when no tumor can be made out by palpation. This is to be done with a fine needle. When the needle has been run into brain tissue no attempt must be made to change its position until it has been entirely withdrawn, as serious injury to associated fibers would otherwise result. The needle may be thrust in again and again without much harm if this precaution be observed—provided that the point is never allowed to come near the base of the brain nor the region of the pons and medulla.[2]

If absolutely necessary in order to complete the exploration, an incision may be made down to the suspicious point; this will be rarely called for and should never be done unless urgently demanded. The resulting cicatrix may, in certain regions, give rise to serious consequences.

If the tumor be found so extensive as to defy removal, the dura is to be closed over it with fine catgut stitches and the opening in the skull enlarged until it is fully two or two and a half inches by four or four and a half—to allow relief from the dangerous and agonizing intracranial pressure.

When the tumor is very vascular (as when in the meninges) it becomes necessary to surround it with a number of catgut ligatures before extirpating. The gut may be simply passed around the vessels, one by one, with a needle and tied; but when they are not superficial it becomes necessary to pass the sutures deeply into brain tissue with a large curved needle and tie *en masse*, with very little force; these sutures are repeated until the tumor has been entirely gone around, when the cutting can be done in the circle thus made with little hemorrhage except from the under surface—which can be checked after excision is finished.

The after treatment is the same as that of any other trephining and will be described in another lecture, when the general subject of head operations is under consideration.

CASES.

It has been my good fortune to operate upon eight cases of brain tumor—some of them of great interest on account of their rarity as well as the favorable results obtained. The first one I will mention is

Angioma of the Meninges—Removal—Recovery.—Roy L., of Independence, Kan., 12 years of age, was brought to me Nov. 29, 1892. The history showed inherited neurotic tendency; previous health good; was unusually intelligent during early life, but at the age of 3½ years began to have "night terrors," and after a time epilepsy developed; for the last three years convulsions had been severe and frequent and his mental development very slow; spasms were much more frequent at night and were confined to the right side of the body for months and always began there, even after the culmination in general epilepsy.

Examination showed him in excellent physical condition; mental development limited; his language was fairly good, though sharp and quick, and very childish expressions only were employed. He had never been able to learn to read. His right side was far less developed than the left, and his motions were mostly of the left hand.

October 1, I operated at All Saints' Hospital, Kansas City, assisted by Dr. T. B. Thrush and J. F. Binnie, opening the skull with a gouge and enlarging with cutting bone-forceps until a space two by four inches was cleared over the frontal and parietal regions. Upon cutting through the dura a tumor measuring about one and one-half inches across was found growing apparently in the meninges over the upper

[1] In an operation for epilepsy due to old depressed fracture, (case of Joseph A. Barton) I removed the packing from the wounded superior longitudinal sinus at the end of forty-eight hours. Some hours later, during the temporary absence of the nurse, the patient rolled out of bed and set up the hemorrhage with fatal results.

[2] The normal brain tissue is much softer than generally imagined, and unless the surgeon is thoroughly familiar with the natural consistency of the cerebral structures he should chloroform a dog, open its cranium and carefully practice this exploratory puncture, as well as cutting the brain before attempting operation.

part of the arm center and the leg center, directly over the fissure of Rolando, as shown in this drawing.

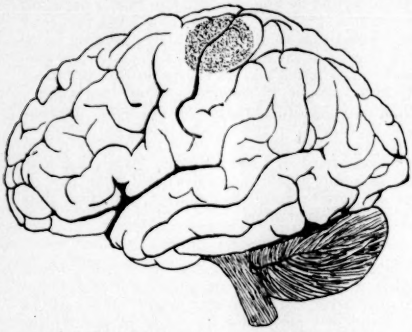


Diagram showing location of angioma cavernosum; dark area representing tumor.

The mass was firmly adherent to the surface of the brain, whether from inflammatory deposits or from actual involvement of brain tissue in the growth we could not decide; these attachments were broken up without much hemorrhage after the vessels of the dura—which were so enlarged as to resemble varicose veins in their appearance—were tied with catgut at some distance from the tumor. The mass itself bled profusely during this manipulation, but the hemorrhage was partially checked by pressure until the entire afferent vessels were tied. Then the tumor was excised and all oozing arrested by hot water. The dura was brought together as well as possible, much iodoform put in, catgut drainage inserted and the scalp closed in one hour and ten minutes from the first incision.

The tumor was angioma cavernosum.

December 2, the record says: "Little shock. Slept four or five hours. No spasms during night, though very restless at times. Temperature 99⅕.

December 3, he is reported as having slept all night—something unprecedented for years. At 10 A.M. I found him sitting up in bed playing, with temperature 98.5 degrees.

December 10 the dressings were removed and the wound found healed by primary union. The general condition was satisfactory and there had been no return of spasms.

December 21 he was discharged from the hospital.

May 10, 1893, he was reported as still in good health and no convulsions had occurred after his discharge from the hospital.

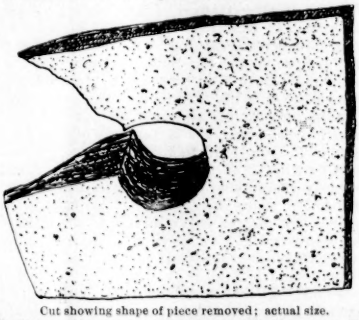
A late report states that the spasms have again appeared.

The most surprising thing about this case was the absolutely ideal convalescence. After the second day he acted just as if nothing had happened; which was remarkable when we consider the amount of blood which was lost.

The second case I wish to mention is one of my two fatal operations for tumor; it presents some peculiar features.

Sarcoma of the Dura—Operation—Death.—P. P. B., of Norris, Mo., aged 28 years, was sent to me by Dr. J. H. Thompson, of Kansas City, August 19, 1892. He gave the following history: Family record and previous health good. In May, 1885, he was struck upon the head, from which he was unconscious eight hours; this was followed by vertigo which continued several days but gradually disappeared; after which recovery seemed complete. In May, 1887, he had a severe convulsion which left a partial paralysis of the left arm for some days. Two hard convulsions had occurred within a few weeks before examination. The only symptoms I could find were intense pain in the occipital region, choked disc and disturbance of vision, pupils dilated; mind becoming affected—memory impaired; frequent epileptic seizures limited to the thumb and index finger of the left hand, the muscles of the eyelids and the angle of the mouth; the spasms were followed by a tingling sensation in the same region; no loss of consciousness.

August 26, at 9 A.M., assisted by Drs. J. H. Thompson and T. B. Thrush, I made a trephine opening over the region presiding over motion of the implicated muscles, finding the skull a little more than five-eighths of an inch in thickness. Upon removal of the piece of bone, hemorrhage was terrific; the dura bulged prominently and presented a tumor directly below the hole; I tried to enlarge the opening with Keen's forceps but bleeding was so excessive from the bone and tumor that we had to tampon the wound with gauze to prevent death upon the table. So I removed a piece of skull with the Hey's saw, thus:



Cut showing shape of piece removed; actual size.

The hemorrhage was again so exceedingly severe it was evident that death would occur during attempt at removal, so a compress of iodoform gauze was applied in such a way as to completely stop the bleeding and further operation deferred until the patient could rally—operation in two *tempos* being frequently necessary in brain surgery. He was put to bed in bad shape; all the usual remedies for shock being employed. At 3 P.M. he was conscious and said the terrible pain in his head had gone much to his relief. Pupils were contracted to their normal size for the first time in several weeks. Pulse was imperceptible at the wrist. He died at 6:30 P.M. of "shock"—that is, loss of blood at the time of operation. There was no bleeding after he was placed in bed.

The post-mortem examination showed this was sarcoma of the dura which penetrated more than an inch into the brain, but which was readily enucleated. Had there been five minutes more of operation the tumor could easily have been removed. The location is here shown:

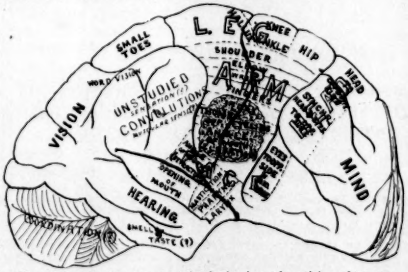


Figure showing known areas in the brain and position of tumor here described—purely diagrammatic.

One of the interesting questions pertaining to this case is, Was there any relation between the blow and the development of the sarcoma? We have in the past been taught to believe that trauma is one of the causes of malignant growths, and that a blow which occurred many years before the appearance of the tumor might still be regarded as the exciting agent in its history, producing some change in embryonic connective tissue cells which would eventually terminate in sarcoma.

If answered in the affirmative, a second question naturally follows: did the sarcoma begin its development soon after the injury? There are certain things about the history to lead us to infer that such was the case; *e. g.*, almost exactly two years after the accident he had a convulsion which left a paralysis of the left arm for some time. What was the cause of this epileptic paroxysm in a patient otherwise in perfect health and free from neurotic tendency? Was it an extradural (sub-cranial) hemorrhage, or was it an irritation due to the presence of the tumor already developing? We can only surmise as to the proper answer. Slowly growing spindle-celled sarcomata have been reported by a number of observers; Warren in his "Surgical Pathology" (page 718) speaking of sarcoma affecting the parietal bone and its periosteum mentions a sarcoma of the dura which persisted from 1846 to 1866 and says: "Other cases of slow growth of these tumors are recorded; one of twenty years, one of fifteen years, and several of four or five years duration." If we take it for granted that this growth began as late as the time of the first convulsion, May, 1887, a period of more than five years elapsed before it caused death.

The query then arises, Why did it not occasion serious trouble earlier in its history? The reply I have already given, in the assertion that the brain often shows a remarkable tolerance to slowly increasing growths, and that only when a tumor reaches a size sufficient to interfere with vision is its existence suspected. This patient knew there was something "wrong in his head," as he expressed it, for some time, but did not regard it as serious until his eyesight failed. He then sought the oculist, who immediately recognized the fearful seriousness of the case, explained that less than two months of life probably remained and advised removal as the only possible escape; unfortunately it was too late.

A description of other cases of brain tumor upon which I have operated will prove interesting in illustration of some of the statements I have made; this will therefore be given in the next lecture.

(To be continued.)

ORIGINAL ARTICLES

GASTRO-ENTEROSTOMY, PERFORATION OF THE STOMACH, PERFORATION OF THE INTESTINE, INTESTINAL OBSTRUCTION, AND SOME OF THE LESSONS THEY TEACH.

A paper read by special invitation before the Shelby County Medical Society, held at Shelbyville, Ind., April 8, 1896.

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It is only a few years since stenosis of the pylorus, intestinal obstruction and gastric and intestinal perforation were considered fatal diseases. For the surgeon to have even suggested operative interference under the circumstances would have only been to have incurred censure on the part of the medical profession as well as the laity.

During the last decade the advancement of surgical knowledge and the improvement of its technique has enabled the surgeon to invade the abdominal cavity, and handle it with comparatively the same accuracy and confidence that the mechanic controls or repairs a machine.

When invited by your secretary to read a paper on this occasion, I was at a loss to know what subject I should select that would be of interest, saying nothing of benefit to the members of this active and progressive Association and its guests on this occasion.

At first thought it occurred to me that gastro-enterostomy would, perhaps, be of some interest, but on more mature reflection, I took the liberty of modifying my subject so as to cover two classes of conditions occurring in the abdominal cavity, and will, so far as I am able, illustrate what I may say on these subjects by specimens, and at the same time draw a few comparisons.

GASTRO-ENTEROSTOMY.

Gastro-enterostomy is usually performed where stenosis of the pylorus exists, whether of carcinomatous, cicatricial, fibrous or other origin. It is perhaps more frequently performed for cancer of the pylorus and may be of a radical nature or simply of a temporary character. Having determined by the symptoms which are familiar to you all, that obstruction of the pylorus exists, it is not always possible nor is it necessary for the diagnostician to determine absolutely before submitting his patient to an operation, the exact pathologic condition that is producing stenosis. From the fact that you have an obstruction, it is sufficient evidence to warrant an operation. If during the operation it is satisfactorily determined that the blockade is caused by cicatricial bands or by fibrous contraction of a benign character, it is not usually necessary to make an excision. Under these circumstances it is only necessary to "side-track," so to speak, this portion of the intestinal canal, by performing a gastro-enterostomy and thereby establishing a new opening between the stomach and the bowel.

Experimental research has demonstrated that where this can be done, that portion of the bowel which is thereby "retired from active service" becomes atrophied from disuse, and the digestive function of the gastro-intestinal canal is, as a rule, re-established through the new channel.

If we find by operative interference that we have a malignant growth to contend with, and it is possible to remove it, then it is necessary to perform an enterectomy, and remove all the diseased parts, closing up the stomach as well as the intestine under septic precautions, with a view of giving permanent relief.

If the growth is malignant and has involved the adjacent tissues to such an extent as to prohibit its removal, there is nothing left but to perform a gastro-enterostomy and contribute to the patient's comfort and length of days. As an illustration of this latter condition allow me briefly to report the following case:

Mr. F. B. P., age 52, a widower, was admitted to the medical ward of the Protestant Hospital, Columbus, Ohio, Feb. 5, 1894, for carcinoma of the pylorus. He was very much emaciated, could retain but little or no food, although hungry and anxious to eat, but when given any kind of food he retained it only a short time when it was ejected from the stomach and in consequence the patient continued the slow process of starvation. My attention was called to the case by Dr. Adams, who was then in charge of the med-

ical ward; an examination confirmed the diagnosis of obstruction of the pylorus which was probably due to carcinoma. Assisted by Dr. Means, he was operated on March 19, 1894, when we found a large carcinoma, which not only caused complete stenosis of the pylorus, but involved so many of the surrounding tissues that it was impossible to attempt to remove it. We therefore performed gastro-enterostomy, using the Senn bone plates. The patient rallied fairly well after the operation, notwithstanding his emaciated and debilitated condition. His appetite soon returned and for a short time he was able to eat and assimilate the more easily digested digested liquid foods, such as milk, beef teas and meat broths, to which were added, by degrees, a more substantial diet, which was not only relished but retained and digested. He was discharged the latter part of May, 1894, very much improved. I followed up the case and found that he was admitted to the Soldiers' and Sailors' Home at Sandusky, on May 29.

Through the courtesy of Dr. E. M. Heard, Assistant Surgeon at that institution, I received the following information relative to this case: After describing his general condition, the Doctor stated that he was nauseated after each meal and unable to take anything but liquids on account of nausea and discomfort. A physical examination revealed a cicatrix in the linea alba, extending from the center of which, was a small tumor of brownish color and firm consistency. Percussion revealed dullness over epigastrium, to right and above incision, about the size of an orange. The patient was put upon supportive treatment but gradually succumbed to the malignant disease and died from inanition on July 14, 1894. An autopsy was held eight hours after death, which revealed adhesions binding the intestines together but the abdominal wall was free. Duodenum firmly adhered to mass at pylorus. Upon opening the stomach, found a loop of black silk engaged in mucous membrane near the pylorus, and an opening admitting a lead pencil from the stomach to the intestines, evidently the result of an operation. At the pylorus was found a tumor broken down at a line corresponding with the junction with the stomach.

We will not take up your time going into further details of this case, except to demonstrate the feasibility of a gastro-enterostomy even in advanced malignant disease, which we believe is justifiable, and in a majority of cases will result in giving temporary relief, prolonging life, and also prevent the patient from dying the horrible death of starvation. Last, but not least, it shows what can be done when the peritoneum is protected from septic infection.

PERFORATION OF THE STOMACH.

On Dec. 24, 1894, I was called in the forenoon in counsel with Dr. Adams to see Mrs. J. M. B., age 32, married, no children, whom I found suffering agonizing pain. I inquired of her history and learned that she had suffered from ulceration of the stomach for over ten years; also had been troubled with uterine and ovarian irritation and irregular menstruation. She was in her usual health and attending to her duties about the house until 8 A. M., when she was taken with excruciating pains in right shoulder, left side and over the left ovary; also complained of tenderness along the spine. There was no fever, increase of pulse or bloating of the abdomen at 11 A. M., when seen by the writer in consultation with the family physician. I was called again at 3 P. M., and found the pulse 120, temperature 104, when operative interference was seriously considered, for perforation of *some part* of the abdominal viscera. The obscure symptoms and reflex irritation, together with the history of her previous attacks of a similar character from which she recovered, caused us to hesitate. Subsequently, Dr. Baldwin was called in counsel, who agreed with us as to the probability of a perforation, but owing to the acute peritonitis, which had rapidly developed in the last few hours, it was decided that it was inadvisable to operate. The patient rapidly sank and died in twenty-six hours from the time she was first taken with the last attack. A post-mortem was held five hours after death, which revealed a violent general peritonitis the result of septic infection due to a large perforation of the stomach.

In order that you may more fully appreciate the condition which led to the perforation, I have brought the specimen with me and will pass it around for the benefit of those interested. You will observe the marked cicatricial contraction which has taken place about four inches above the pylorus and which has no doubt existed for years, but owing to the low vitality which we always find in cicatricial tissues, necrosis had taken place resulting in perforation and the escape of the contents of the stomach into the abdominal cavity. The practicability of operating on a case of this kind is quite uncertain as you will readily observe by examining the specimen.

You will note there is practically a large and small stomach, which are separated by cicatricial bands, through which the perforation has occurred, It would be quite impracticable to make an excision of this cicatricial portion, unite the lesser with the larger part of the stomach and expect the operation to be successful; and at the same time to attempt to close the opening by a plastic operation, we would have the low vitality which is always present in cicatricial tissue to contend with, which would surely be followed by necrosis and by another perforation.

The only operation which to my mind would present a reasonable chance of recovery in a case of this kind would be to excise the cicatricial band, together with the small portion of the stomach, and then after closing the stomach perform a gastro-enterostomy, and even this would be a difficult and hazardous operation, especially so when the abdominal cavity was so thoroughly infected with the contents of the stomach. It has been my experience that general peritonitis due to perforation is usually fatal in a very short time, no matter what you do.

In this connection I recall a case, which I attended while living in Mansfield, of a young man who had been complaining for several weeks of some stomach difficulty for which he had been treating with a homeopath, who had diagnosed it as indigestion. The young man had been at work all day plowing corn, ate a hearty supper, and a few hours afterward complained of a severe pain in the region of the umbilicus. I was sent for about midnight, found him in collapse with every evidence of general peritonitis; hands and feet cold, thready pulse, rapid respiration, etc. I diagnosed a perforation of the stomach with an unfavorable prognosis.

I did not think it wise to attempt an operation, although it was recognized only a few hours from the

time the perforation had taken place, owing to the escape of the septic material into the peritoneal cavity, and the violent peritonitis which had already set up. The young man died in less than twelve hours from the occurrence of the perforation. A post-mortem revealed a perforation of the stomach in the region of the large curvature, sufficiently large to allow me to pass my thumb through it, while the abdominal cavity was filled up with meat, potatoes, corn and other material which he had eaten for his supper.

PERFORATION OF THE INTESTINE.

Only a few days ago, March 30, I was called in counsel with Dr. Emerick to see Mr. P., aged 23, a sawyer who gave the following brief history: about 5 o'clock P.M., March 29, while working on a rip-saw he was struck with a board some three feet in length, seven inches in width and an inch in thickness which was hurled from the saw very violently, the end of the board striking him in the right iliac fossa. Notwithstanding there was not a mark to be discovered on the abdomen, yet there was all the symptoms of a perforation of the intestine accompanied with the usual prostration and collapse. He was admitted to the Protestant Hospital on March 30, and operated on that afternoon. Assisted by Dr. Means I opened the abdominal cavity and found it filled with fecal matter and enormous quantities of plastic exudation, the result of the most violent septic peritonitis, which had adhered the large and small intestines in one general mass.

An opening was found in the ileum about eight inches above the ileo-cecal valve and was sufficiently large to pass the thumb through with ease. The abdominal cavity was thoroughly washed out with sterilized water. The opening was closed with the Lembert suture, a drainage tube inserted and the abdominal opening closed with interrupted sutures. It is scarcely necessary for me to state that this case died in fifty-three hours after the injury and thirty hours after the operation.

We gave it as our opinion, before the operation as well as after it, that the prognosis was exceedingly grave, yet, at the same time I feel that it is the surgeon's duty, even in these extreme cases, to give the patient the last chance for escape from death. In this case we had some peculiar conditions to which I will now call attention:

There was not a mark of any kind to be seen on the skin. A small rupture could be felt through the abdominal muscle, but the parietal peritoneum was not torn, yet at the same time, the intestinal peritoneum together with the walls of the intestine sustained a large lacerated wound. I have seen several cases of this kind occurring in a similar manner, in which no external violence could be observed, yet the stroke was so severe as to cause a perforation of the intestine, and operation or post-mortem, as the case may have been, revealed a severe lacerated wound of the intestine.

INTESTINAL OBSTRUCTION.

Intestinal obstruction occurs quite frequently and is always a perplexing problem for the general practitioner. He, as a rule, is loth to advise a patient to be operated on, and especially so until he has tried all the remedies at his command from a medical standpoint, to relieve the obstruction. We must all admit that the diagnosis of intestinal obstruction is quite difficult to make, even to the expert, in its early stages; how much more so must it be to the general practitioner who sees only a few cases in a lifetime. At the same time, I think we must all admit that where intestinal obstruction *does* exist, and where heroic efforts have been made to relieve the obstruction by severe and repeated catharsis and rectal injections, they, as a rule, contribute to the danger of the case by increasing the intestinal peristalsis and peritoneal congestion. At the same time, so long as there is no septic infection of the peritoneal cavity it will withstand a great amount of torture without fatal results.

I recall a case of this kind in which I was called in counsel by Dr. Adams, the attending physician, and found a lady aged 51 who had been suffering for several weeks with pain in the region of the gall bladder, but during the last few days prior to my visit, had every evidence of intestinal obstruction. The attending physician and I agreed in the diagnosis. She was admitted to the Protestant Hospital late on the evening of December 16, was gotten ready for an operation and was operated on the morning of the 17th. On opening the abdominal cavity we found the small intestine injected and dilated to fully double its natural size, while the ascending, transverse and descending colon was contracted until it was not larger than the normal ileum.

This condition of the intestine was a ready guide to the point of obstruction, and in a few moments I found the blockade, which at this time was complete and existed at the ileo-cecal valve. On examination of the cause of obstruction, I found a mass in the small bowel that was movable through the lumen of the intestine, which was filled with liquid matter. After having slipped the lump up to a point about a foot above the ileo-cecal valve, I then prepared to open the intestine and remove it. Dr. Baldwin who was assisting me, very kindly separated, as completely as possible the contents of the intestine from the mass and held the bowel firmly between his fingers on either side of it, at the same time holding the intestine outside of the abdomen to avoid infection.

An incision was made in the ileum large enough to allow the escape of the mass which, when removed, was nearly the size of a guinea egg. The bowel was thoroughly cleansed, the incision closed with the Lembert suture and the abdominal incision closed and dressed in the ordinary manner. The patient made a rapid and uninterrupted recovery and was discharged from the hospital just seventeen days from the time she was admitted. On examining the mass (which has now become very much shriveled from desiccation) it was found to be made up of gall stones, fecal matter and apple parings, which in some manner had become cemented together into a firm ball, assuming the appearance of an enterolith and plugging up the ileo-cecal valve, and which would have caused her death had it not been removed. At this writing I am informed by Dr. Adams, she is enjoying her usual health and is attending to the duties of her household.

We do not propose to go into a general discussion of obstruction of the bowel, but we have another case which we wish to report, with a view of drawing some practical, clinical conclusions from this class of cases:

On the morning of April 3, 1895, I was called in,

counsel by Dr. Beery who reported to me that he had a case of intestinal obstruction, which was admitted to the Protestant Hospital about 8 o'clock the same morning. The patient M. B., age 17, a tinner by occupation, reported that he had been troubled for some three years with constipation which at times was very troublesome, and during all this time he had been compelled to take some laxative in order to obtain a movement of the bowels.

On Sunday morning, March 31, he felt some colicky pains which grew worse, but his attending physician was not called until the next morning. The usual remedies were resorted to for the relief of the obstruction but without avail. An examination satisfied the attending physician, as well myself, that we had an obstruction to contend with and consequently an operation was advised. With the assistance of Dr. Baldwin, the young man was operated on between 9 and 10 o'clock A.M. on April 3. On entering the abdominal cavity, we found the lower portion of the ileum corresponding with a horizontal line across the umbilicus, collapsed and empty, while that portion above the horizontal line was distended. On further examination a firm band about a fourth of an inch wide was found, which extended from the descending colon across the abdomen to the ascending colon on a line with the umbilicus. There were neither parietal nor intestinal adhesions, except at each end of this band. The end extending to the descending colon was firmly adherent to it, while the other end was firmly fastened to a narrow piece of omentum which in turn adhered to the ascending colon. At the juncture of the band with the strip of omentum was found a tumor, which I have the pleasure of presenting to you, about the size of the end of your thumb and which was entirely free from adhesions and had the appearance of an organized hematoma. It was pedunculated and hung down from the band like a plum from a twig. This band was ligated at each end and removed with the tumor. The abdomen was closed and dressed in the usual manner, and the patient is making a rapid and uninterrupted recovery without an abnormal change of temperature or pulse.

Our diagnosis as to the character of the tumor was subsequently confirmed by Dr. Fraker, the pathologist of the hospital.

There are some remarkable features in this case, which have evidently been the result of a hematoma of the omentum setting up a localized inflammation, followed with cell proliferation, building a band in this peculiar manner across the entire abdominal cavity which for years partially obstructed the peristaltic action of the bowels, allowing only the liquid contents to pass, but finally became so firm as to cause a complete obstruction which would undoubtedly have been followed with death had not operative interference been instituted.

CONCLUSIONS.

In studying these cases from a clinical standpoint we find that they divide themselves into two general divisions:

1. Those in which we are warranted in giving a favorable prognosis.

2. Those in which we may expect an unfavorable prognosis.

In the first case, notwithstanding we had a carcinoma of the pylorus and performed a gastro-enterostomy in an aged party, who was almost devitalized from starvation, yet the result of the operation was favorable, because we were enabled to avoid septic infection. In the fourth case we had an obstruction of the intestine, which was occluded by a fecal mass, causing severe enteritis with enormous distension of the bowel, yet by removing the mechanical obstruction aseptically, the patient made an uninterrupted recovery. In the fifth case we had a mechanical obstruction of a different type caused by a band, which was also operated on aseptically with the most favorable results.

In the second class, consisting of perforations, we have in the two cases reported, two perforations of the stomach, both of which died fram acute, violent, septic peritonitis within a few hours after its occurrence. In the third case we had a perforation of the bowel, producing the same general results as those produced by the perforation of the stomach, each one setting up an intense septic peritonitis which resulted in death in a few hours, notwithstanding an operation was performed in the third case for its relief.

A study of these cases, leads us to the legitimate conclusion that we are justified in giving a favorable prognosis where there is an obstruction without septic infection but, on the other hand, where there is *psrforation* and *septic infection* we are not justified in giving a favorable prognosis; on the contrary, we should look upon such cases with fear and trembling.

In conclusion, allow me to repeat that I believe it is the duty of a surgeon, even in the face of the grave conditions which usually arise in perforation of the stomach or intestine, to operate and to seek to make the operation at the earliest possible moment after the accident. Without an operation we have nothing to hope for. With an operation there is a possible chance of saving a human life.

150 East Broad Street.

TUMORS OF THE EYEBALL.

(EXHIBITION OF SPECIMENS).

Read at the meeting of the Tri-State Medical Society, St. Louis, April 4, 1895.

BY WILLIAM H. WILDER, M.D.

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The study of tumors of the eye is of the greatest importance to the general practitioner, as well as to the specialist, for the reason that not only is the special sense endangered, but the life of the patient frequently depends upon the early recognition and prompt treatment of a neoplasm of this part. Our time will not allow a consideration of the tumors affecting the lids, lacrymal glands and other adnexa of the eye, but it is the purpose of this paper to discuss briefly the most frequent growths that attack the eyeball.

Tumors affecting the cornea primarily are, from the nature of this structure, exceedingly rare. Usually they spring from the edge of it where the conjunctiva passes over into the epithelial layer of the cornea. Of the benign growths may be mentioned dermoid, which is usually situated at the limbus, involving both conjunctiva and cornea. Rarely it is seen on the cornea alone, as was the case with the small microscopic specimen shown here. It appears as a grayish, or yellowish-white, rounded mass varying in size from half a grain of wheat to that of a hazel nut or even larger. It is usually single but it

may be a double growth. Its surface is smooth and may be sprinkled with fine hairs. It is of congenital origin and supposed to be caused by an inversion of the epiblast. It is seldom cystic, as are dermoids of other parts, but is a solid growth containing hair follicles, elastic fibrous tissue, sebaceous glands and other histologic parts of cutaneous tissue. It is not malignant, and although growing slowly, is not likely to recur after a thorough removal.

The irritation of the eye from the scratching of the hairs, and the unsightly appearance of the growth, however small, usually bring the patient promptly to the surgeon. The growth should be cautiously shaved off the cornea with a cataract knife, and the base lightly touched with a cautery if it should show signs of recurrence.

The malignant tumors that affect the cornea are sarcoma and epithelioma. Sarcoma, seldom, if ever, begins primarily in the cornea, but takes its departure from the limbus or sclero-corneal margin. It is almost invariably pigmented, of the type known as melano-sarcoma, and makes its appearance at times in a small pigmented spot which may have been thought harmless. This part of the eye normally contains pigment, more noticeable in a person of dark complexion, in whom a distinct ring around the cornea may sometimes be seen. It does not always infiltrate the cornea, but often grows over it, although it can be demonstrated that the epithelial layer of the cornea passes up on to the tumor. It presents either a smooth or a lobulated dark brown appearance, is firm to the touch and bleeds easily because of its great vascularity. Often a tumor in this situation is an outgrowth from a similar mass inside the eyeball, that has infiltrated the ciliary body and sclera and extended its ravages to the structures on the outside of the globe. The prognosis is grave.

Epithelioma is a rather frequent type of growth in this neighborhood. This may be explained, according to Fuchs, by the predilection that epithelioma has for attacking those parts where the epithelial covering changes its character as it passes from one part to another. Examples are familiar in the frequency of epithelial growths about the anus, the lips and the eyelids. We have an analogous condition in the limbus, where the epithelium of the conjunctiva passes over to that of the cornea. A small nodule appears at the junction of cornea and conjunctiva, and grows sometimes with great rapidity. Although occurring in advanced middle life, it does not invariably do so, according to Saemisch, but may also occur in young individuals. This growth spreads over the cornea, but does not infiltrate it except when it is quite advanced. Even then it is quite easily removed from the subjacent corneal structure. It presents a grayish-white, nodulated, sometimes distinctly papillated appearance, and is accompanied at times with severe pain. Often these epithelial cancers are deeply pigmented and this form grows to a great size, separating the lids and projecting from the palpebral fissure.

The question of attempting to save the eye, when sight is not affected, by carefully dissecting away an epithelioma or sarcoma from the cornea is an important one. When the growth is small and has not invaded the corneal or scleral tissue, it may be tried with some hope of success, but I am skeptical that anything short of enucleation will suffice to check these malignant growths. Under the microscope is a section of a small epithelial growth, removed about eighteen months ago from right cornea of a patient in the Illinois Eye and Ear Infirmary, but as he never reported again it is not known with what result.

It should be remembered that the nodule may be an outgrowth from an intra-ocular neoplasm. The danger of mistaking such a case for a localized sarcoma of the scleral region is not great if reasonable care is practiced.

Tumors of the iris are not common. Tuberculosis affecting this part appears usually in the form of reddish-gray tubercles situated at the root of the iris. These coalescing may form a distinct nodular mass, and with the increase of the growth there may be considerable pain, pericorneal redness and exudation into the anterior chamber. The growth may perforate the cornea or sclera.

Sarcoma of the iris may be of the pigmented or white variety; the former is the more frequent as well as more malignant. The disease may occur at any age; as a primary tumor of the iris it is rare, being usually an extension of a growth from the ciliary body. When the growth is of the melanotic type it is easily diagnosed. When of the white variety it may be confounded with tubercle, gumma or cyst of the iris. The former will probably show a conglomeration of tubercles of a dirty grayish color, situated at the root of the iris; a gumma will not be so distinctly circumscribed and there will be a syphilitic history, while a cyst will show a pearlish reflex quite characteristic.

These growths may be so small and circumscribed as to make it possible to successfully remove them by an iridectomy. This should be large enough to excise a considerable portion of the healthy iris around the tumor. At the first sign of recurrence, enucleation should be performed to prevent further spread of the disease. Cysts of the iris may be caused by either cysticercus or by the implantation of epithelial masses in the iris after a wound. We shall omit the consideration of them, as well as of nævi, which are congenital black patches or elevations and extremely rare.

Of all tumors affecting the eyeball, those most to be dreaded occur in the choroid, ciliary body and retina. According to Noyes, tumors of the choroid are met about once in fifteen hundred eye cases. Eighty-five per cent. of such tumors are said to be sarcomata, and of these the greater number are pigmented. Sarcoma may also spring from the uveal portion of the ciliary body. (Lawford and Collins in an examination of one hundred and three cases, report six affecting the ciliary body, one in the iris, two affecting both choroid and ciliary body, and ninety-four originating in the choroid behind the ciliary body.) Usually the growth attains a considerable size before it is recognized, unless affecting primarily the region of the yellow spot, in which case the impairment of sight brings the patient promptly to the physician. It is customary to divide the clinical history of these cases into four stages, according to Knapp:

1. A period of early growth before there is any irritation.
2. A period of inflammation.
3. Perforation of the eyeball and extension of the tumor outside the eye.
4. Metastasis.

In the first stage there may be no symptoms unless, as said before, the tumor encroaches on that part of the eye which is used for distinct vision. In this stage there may or may not be increased tension; although, as a rule, it is increased. If the physician is fortunate enough to see the eye during the first stage he may, by an ophthalmoscopic examination, discover the growth. He will then see a mass within the eye with a comparatively smooth surface, over which the retina is seen to pass. The retinal vessels are convoluted because of the lobular condition of the tumor; and the retina itself is bluish-gray in color. A careful examination with a bright light may show that the tumor is vascular. The duration of the first stage varies from six months to four years. Fuchs found the average to be in sixty-seven cases, twenty-one months.

Most authors have found that males are affected rather more frequently than females. According to Lawford and Collins, 57 per cent. of the former and 43 per cent. of the latter are affected.

This is a disease occurring generally after the fortieth year; the average age of the 103 cases of Lawford and Collins was 48.42 years. The average of 259 cases reported by Fuchs was 44.2 years. The average of cases reported by Freudenthal was 49.4 years.

With the beginning of the second stage there are signs of inflammation. The eye becomes painful and tender on pressure, the tension is increased, ciliary region injected, anterior chamber shallow and all the symptoms of acute glaucoma are present. In this stage there may also be bulging or staphyloma of the ciliary region, showing that the growth threatens to perforate the sclera. An interesting point, with reference to the subsequent history, is that the prognosis is more grave when the tension is increased; *e.g.*, Lawford and Collins found metastatic processes more frequent in those cases presenting increased tension before enucleation, than in those in which the tension was normal.

In the third stage the tumor escapes from the eyeball and invades the surrounding tissue. The pain and distension that were present before, now disappear because of the relaxation of the tension. The mass grows with much greater rapidity. Unfortunately many of the cases do not come to the surgeon until this stage is reached, when the chances of an ultimately successful operation are greatly diminished. The optic nerve is invaded in at least one-fifth of the cases, and the prognosis is thereby rendered more grave.

In the fourth stage metastasis occurs most frequently in the liver, though it may occur in the lungs, brain, stomach, uterus, or other organs. Fuchs found that 18.5 per cent. of his cases suffered from metastasis. Hirschberg gives 38 per cent.; and in 32.9 per cent. Lawford and Collins traced death to this cause.

One of the greatest dangers to the patient is that of local recurrence, which is diminished if the eye is removed before the tumor has reached a sufficient size to cause increased tension and local irritation. As mentioned above, the tables of Lawford and Collins show that more cases are fatal when the enucleation is performed after the tension is increased than if it is done when the tension is normal. Once the growth has burst through the eyeball, the dangers are greatly increased.

Fuchs records local recurrence in 31 out of 235 cases or 13 per cent. Freudenthal found 25 per cent. of local recurrences, 6 out of 24 cases, while Lawford and Collins note 8.86 per cent.—7 out of 179 cases. The danger of local recurrence is greatest within the first year.

Prognosis.—Lawford and Collins in a report of 103 cases subjected to operation, were able to trace 79—of this number 39 or 49.36 per cent. were alive at the time of the report. In twenty of these, an interval of three or more years has elapsed since the removal of the primary growth, and these are considered to be probable cures. This gives a percentage of recoveries of 25.31. The averages given by other writers vary from 6 per cent. by Fuchs to 38 per cent. by Freudenthal.

Metastasis has been known to occur eighteen and even twenty-five years after the removal of the primary growth—but whether the tardy occurrence of such processes should be regarded as metastatic is certainly a debatable question. However, the possibility of such an event, even after the lapse of many years, should make the physician extremely cautious in his prognosis, even though the patient is apparently cured. The therapeutics of this question has naturally been considered in discussing the symptomatology and prognosis; it can be summed up in a few words—excise the eye as soon as possible after the diagnosis has been made.

Glioma is the only form of tumor affecting the retina. It takes its origin from either the inner or outer granular layer, and in its growth may involve all the structures of the eyeball except the cornea and the lens. Histologically it is closely allied to round-celled sarcoma, being composed of small cells, sometimes with short processes having a large nucleus and a small amount of protoplasm. It is difficult to demonstrate this protoplasm except on freshly prepared specimens. The intercellular substance is slightly fibrillar, but mostly composed of a semi-fluid material which gives the whole mass a consistency like soft brain tissue. The neoplasm is bountifully supplied with blood vessels. In its growth it attacks the choroid, causing a proliferation of the cells of that structure, and separating it from the sclerotic by spreading in the loose connective tissue between these two coats of the eye. In this way it may pass beneath the ciliary body and appear in the anterior chamber.

The tumor grows from the retina in clusters, well illustrated in the specimens, which give it a nodulated appearance often distinctly seen with the ophthalmoscope. Foci of the growth may develop in the vitreous and choroid and spread as independent tumors. After filling the eye the sclerotic is attacked, its fibrous tissue infiltrated and softened, until the tumor escapes from the eyeball and invades the orbit. Or, even before the mass has attained a great size inside the eye, it may find a way of escape through the point of entrance of the optic nerve, along which it then extends. Having escaped from the eyeball, the neoplasm takes on a more rapid growth in the soft parts of the orbit, and soon it presses the lids apart and presents itself as a hideous fungous mass which bleeds easily. Death may be caused by extension backward to the brain, or the exhaustion consequent upon the involvement of other parts, either by continuity or metastasis.

Symptomatology.—Clinically, this disease, like sarcoma, may be divided into four stages. In the first

stage there is no increase of tension and no irritation. The parents of the child may discover that it can not see with the affected eye, and that there is a whitish reflex from the pupil. This condition was named by Beers (one of the earlier ophthalmologists), "amaurotic cat's eye."

An examination of the interior of the eye with the ophthalmoscope reveals the growth with its nodulated surface, and possibly with the retinal vessels passing over it. Numerous smaller vessels in the tumor may be seen. As a rule, the vitreous remains clear.

In the second stage, symptoms of irritation and inflammation appear. The eye becomes painful, the tension is increased, the episcleral vessels are injected, the pupil is dilated, the lens and iris are pushed forward and the details of the interior are no longer distinctly seen. The cornea becomes cloudy and may ulcerate. In the third stage, there is perforation of the eyeball and invasion of the orbital tissues. The fourth stage ends the case with either extension along the nerve to the brain, or metastatic processes in the lymphatic glands or other organs, chiefly the liver.

This disease is one of early childhood, occurring very rarely after the age of 10 and with greatest frequency during the first three years of life. Well authenticated cases are recorded by Knapp, Hirschberg, Vetsch, Lawford and Collins, in which the disease was congenital. Furthermore, it happens in about one-fifth of the cases that both eyes are affected at the same time, this symmetrical occurrence not being the result of extension of the growth from one eye to the other along the optic nerve, but an independent affair. The prognosis is absolutely fatal unless the eye is promptly removed.

If excision is performed during the first stage, and before the growth has invaded the optic nerve, there is some chance of recovery. The chances of cure are very slim, however, when the operation is performed in the second stage, when irritation and inflammation have already begun; and when done after the tumor has extended to the orbit, there is almost no hope, although a few cases of so-called recovery are reported, even after complete exenteration of the orbit was necessary to remove the growth.

One should not hesitate to enucleate both eyes if the growth is bilateral, for cases of recovery after double excision for glioma have been reported. Even where there is absolutely no hope, it may be the surgeon's duty to remove the eye, and even the contents of the orbit, to relieve the little patient of his suffering.

103 State Street.

PRE-COLUMBIAN LEPROSY.

BY ALBERT S. ASHMEAD, M.D.
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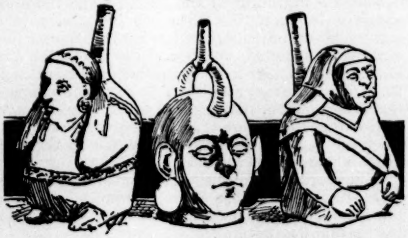
Dr. Muniz, of Lima, Peru, alone of all the authorities known to me, thinks that leprosy did exist among the Incas; he finds evidences of this in some ceramics, the *huacos*.

In the *American Anthropologist* for January, there is an article entitled "The Huacos of Chira Valley, Peru," by Samuel Mathewson Scott. This valley was once teeming with population, though scarcely populated now. In this part of the country, there are numerous ruins and graves, and Mr. Scott's excavations among these monuments of the past, enabled him to make a collection of Peruvian antiquities, now in the Museum of the University of Pennsylvania at Philadelphia. All the pottery found in those burial grounds are called *huacos*. They are found by the side of the mummies. "About the heads of the mummies, whether male or female, were ranged the pieces of pottery in black and red clay which are known as *huacos*. These were probably filled with water or *chicha*—a beer made from corn, the beverage of ancient Peru. Upon these jars the artists expended all their skill. The clay itself is very finely worked; the designs are infinite in variety and imitate every form of animal and vegetable life. There are jars in the shape of bananas, gourds and melons; there are jars ornamented with human figures, climbing monkeys, pelicans, parrots, fish and serpents. These is, moreover, a distinct tendency toward the comic and grotesque—many animals have exaggerated teeth, and birds have quaintly elongated bills."

It is on these vases that Dr. Muniz claims to have found figures which can reasonably, if they must not absolutely be explained, by the intention of the artists to represent leprous effects.

Dr. Brinton, of Philadelphia, kindly invited me to examine the Peruvian antiquities in the Museum of the University of Pennsylvania. Under these antiq-



Huacos pottery of the Incas without deformation.

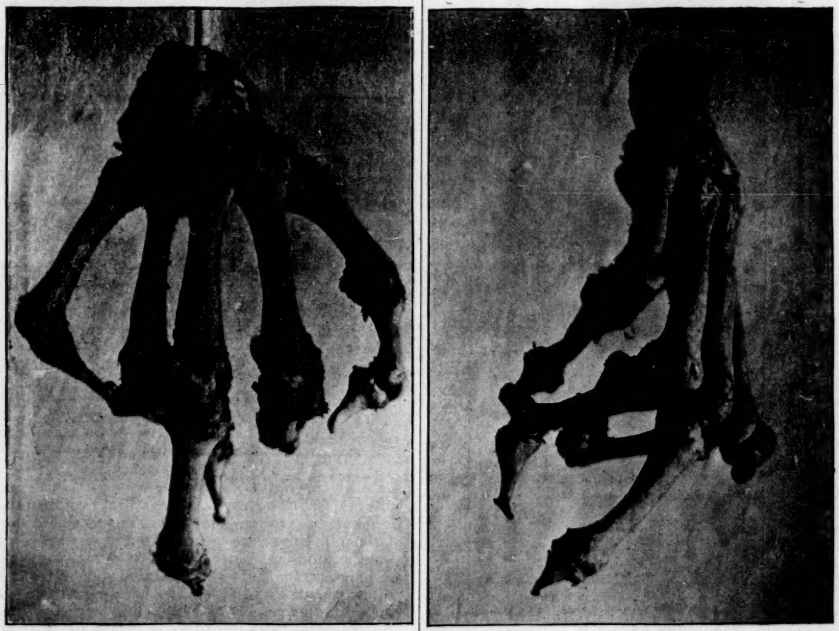
uities can only be understood: 1, hands and feet of mummies; 2, the *huacos*. For skulls are out of the question. "A leprous cranium," writes Hansen, "shows nothing peculiar, as the skull is never affected by leprosy." For the purpose of comparison with mummies' hands and feet, Hansen sent me photographs. (He writes: "You can see the ossa metacarpi, especially the first and the fourth, atrophied, and also the distal phalanges; the curvatures of the fingers are to be seen too,") of a leper's right hand in two attitudes, from Dr. Kaurin's collection of leprous preparations at Reknas leper hospital, Molde, Norway. It belonged to an anesthetic leper.

There is a large collection of *huacos* pottery in the Museum of Archæology of the University of Pennsylvania. I examined it with Mr. Stewart Culin, the director. In none of the specimens was there any representation of face, hand or foot which could in any way be supposed to be indicative of leprosy. I also examined with Mr. Culin, mound-builders pottery[1] from the stone graves of mound-builders in Missouri. According to Mr. Culin's opinion, these specimens are unquestionably anterior to the Conquest. In them the following evolution is shown: First, there appears the simple form in clay of a gourd.[2] Next, the gourd changes to the representa-

[1] The mound-builders were the immediate ancestors of American Indians.
[2] Gourds and shells were mound-builders models.

tion of the pregnant form of a woman, with the face of the woman on top. Thus the vase, which had begun with the original gourd, had become in course of evolution, a human form. Gradually this torso assumed hands, feet, backbone and buttocks. A similar evolution in ceramics, from the gourd to human forms, occurs in East Asia. I think I may make here an observation which will be superfluous for most readers, but which perhaps, will strike some as interesting. The gourd is the original vase of these nations. Naturally, when the artistic genius arose in their descendants, vases were made from clay, in the form of gourds. The idea of vegetable life, existing in the gourd, extended to the vase and developed finally into conceptions of animal life; thus was suggested the pregnant woman with the swelling belly, in a sitting posture. When the human representation had appeared it did not long remain limited to this feminine image; the male also was delineated. The development of the human being originating in the woman's womb, was shown in pottery through all its gradations: development of the face, then face and shoulders, then vases with face, shoulders and hands; feet succeeded, then all these parts with backbone added, developing through the clay; finally came the buttocks. In this way, the vase was endowed with life and became a household idol. The vase living, in the fancy of the people, was supposed to have its eyes on the affairs of the household; if they had made up their minds to commit a sin they took care to turn the face of the earthern god to the wall. The mound builders, in order to leave nothing to chance, made their household gods with blind eyes; this at least is what the examination of these remains leads us to suppose. There are other vases in which the *penates*, as we may call them, have sealed lips, to prevent indiscretions. These blind eyes or sealed lips are the only deviations from the usual and healthy course of nature that I, at least, could discover in these monuments of prehistoric times.

The same evolution from the gourd to perfect human forms is found, as I said before, in East Asia. There leprosy is acknowledged to have existed for many centuries. Yet in the East Asiatic ceramics not the least trace of any intention to represent deformations can be found. It is true that I have seen some deformations in the American Museum of Natural History, New York, but they certainly, whatever they are, are not leprosy; they may be due to syphilis, a disease which we know to have existed in Peru; syphilis and leprosy both would destroy the structures of the nose, and destroying the nose, would spare the upper lip. Now the deformations represented by these works of art show this: in three instances the cartilaginous part of the nose and the upper lip removed as by a knife, showing the septum and nasal bones and the soft tissues covering those remaining, and also the teeth; one figure lying prone upon the belly, with both feet gone to above the ankles. The nose and upper lip partly cut off, but both hands are perfect. Another figure



Lepra Anesthetica. The right hand in two attitudes. From Dr. Kaurin's collection of leprous preparations at Reknas Leper Hospital, Molde, Norway. Sent to Dr. Ashmead by Dr. Armauer Hansen for comparison with bones of Peruvian mummies.

shows a partial loss of the upper lip, a semi-circular piece being cut out on the left side, teeth showing where the lip should have concealed them. This head is drawn far back—opisthotonus. Another one has the nose cut off, with the septum showing, and chin considerably drawn forward, a perfect mouth being at the top of it. Another figure shows a chin drawn strongly over to the right side with loss of upper lip. In all these figures the hands are perfect.

I regret not to be able to give photographs; but the explorer, Mr. Bandelier, the owner of these specimens, who is at this moment excavating in Peru, exacted before his departure, the promise that these articles should not be represented before he had finished his research. I asked the director, Mr. Saville, whether he thought, from his own investigations in

Hands and forearm of Peruvian mummy, presumably pre-Columbian. Museum of Archæology, University of Pennsylvania.

Yucatan, Mexico and Peru that these peoples would make representations of loathsome diseases on their pottery. He says that he has seen the coitus[3] represented in that pottery, and also some orgies, and that this disposed him to think that other matters might be represented which, in our own ideas, do not belong to art. He called my attention to a publication in the *Scientific American* in 1884, from Dr. Le Plongeon's discoveries in the ruined cities of Yucatan: "The figure (stone) was found on its back; one leg was broken off below the knee, but was found under the figure and afterward adjusted. The head of the statue rested on a stone painted red, that represented the tongue of a serpent, the peculiar shape of which Dr. Le Plongeon long ago discovered to be the letter *chi* or *ch* of the Maya alphabet.

[3] I have seen a silver image from Peru, of a monkey copulating with a llama.

When the figure was placed upright we hardly knew what to call it, it appears so human, yet so apish. In the position it occupies it is 97 centimeters (about three feet) high. So if standing it would not represent a very tall person. It is made of white limestone and painted dark brown. The head is flat at the top and back, and apparently hairless, but painted blue, and over that are red streaks from the forehead down to the shoulders. The eyes are open, and painted blue around the lids. The nose is not pierced, but the clumsily made ears have each a large hole. The mouth is closed and lips painted red. On the back part of the top of the head a hole is pierced, so that a string can be passed through, perhaps to secure a bunch of plumes, perhaps to keep a banner in place, for in the palm of the right hand there is a groove as if for a round stick to fit in there. The hands are not altogether human; where the fingers begin there seem to be mittens, the other ends of which are nowhere visible. The fingers, like the toes, were furnished with nails made of shell, and fitted in place

Head of Peruvian mummy, presumably pre-Columbian. Museum of Archæology, University of Pennsylvania.

with mortar so as to look very natural even in color. Unhappily nearly all were fallen, but we found some of them. A necklace is indicated by a line of red paint around the throat. Garters, below the knee, are painted blue and red. The loins are covered with an ornamental *uiit*, a scanty garment yet in use among the aborigines, and anciently worn by Egyptian laborers. The right foot is turned in, as if the individual had been club-footed. The sandals are painted blue, and close up around the heel, but the very elaborate and fanciful fastenings are red. On one heel is the name, *Cay Canchi*, written with red paint. "This image," says Dr. Le Plongeon, "may possibly represent the sacred monkey of the Mayas, as the *Cynocephalus* was emblematic of the god *Thoth* among the Egyptians."

A monkey, even a deformed one, was thought worthy to be represented in stone. Mr. Saville suggested that it might be, not a monkey, but a leper, as the arms were cramped and the hands were in a clawed position, similar in some degree to that of a leper's hands (not mutilated).

Dr. Emil Holub, an African explorer who was present at the Museum, told Mr. Saville that he has seen

lips cut, as in these *huacos*, and something ornamental placed in the openings, in African Bushmen.

I may say that it would hardly be natural that art should represent loathsome features of nature, which could not be looked at without pain and perhaps horrible recollections. It was the idea of a correct human development that was in the mind of the potter, and what had the horrors of an awful disease to do with that?

It is clear that the non-existence of any leprous characteristics in American antiquities is not a proof that the disease did not exist in this country anterior to the Conquest. The thing is simply this—*non liquet*.

Through the courtesy of Dr. Brinton and Mr. Culin, I have been permitted to examine closely the following Peruvian remains in the collections at the Museum of Archæology, University of Pennsylvania:

1. The Scott collection, from Chiras Valley, Peru, to which reference has been made in the article published in the *American Anthropologist* for January: hands and feet of several mummies; post-Columbian, as shown by the presence of glass beads.

2. Dr. Carl Lumholtz' collection, from Chihuahua, Mexico: cave mummies' hands and feet, presumably ante-Columbian remains from burial caves (a very ancient form of disposing of the dead); North American Indian remains, presumably prehistoric, certainly several hundred years old; cave mummies' hands and feet from Nararachic, Mexico; remains from San Mateo, Peru, near Ancon, the most ancient burial place in Peru.

3. A lacquered mummy head from Ancon, Peru, with gold band over the mouth, presumably of a priest or sacred person carried over the country for worship according to custom.

4. A collection of loose bones of hands and feet from Cave Valley, Mexico (cave burial).

5. Apache bones, hands and feet, from Sonora, Mexico. (Apaches are thought by some observers to have East Asiatic (Tartar) characteristics and customs.)

6. Remains from a cave near Yoqinbo, Chihuahua, Mexico, not ante-Columbian, on account of presence of glass beads.

7. A collection of perforated human bones, mostly humeri, from the mounds of Ohio. These perforations in the olecranon fossa were formerly supposed to be syphilitic; but they really are accounted for by the forcible extension of the arm, necessitated by the grinding of corn. In none of these bones was there any evidence of leprosy.

I examined besides, skulls from Choptauk ossuary, the sand bonepits of Dorchester County, Maryland, remains of Nanticoke Indians; nineteen casts of the Muniz collection of Peruvian skulls, showing ancient trephining, recently exhibited in the Smithsonian Institution, Washington; and skulls of Indians, excavated in Florida. These last are the only ones in which there can be perceived any evidence of disease; probably syphilitic osteitis, through intercourse with Spaniards.

There is a diseased skull in the American Museum of Natural History, New York, from an ancient grave at Lachay, near Chancaz, Peru. It belongs to the famous Bandelier collection. On the left side of the frontal bone, near the median line, there is an egg-shaped, deep cavity, which does not penetrate the internal table of bone. This cavity has the appearance of having contained a hard smooth substance, probably a bone cyst, and the bone seems to have grown partly over the foreign body. Upon the parietal and occipital bones and especially on the frontal bone between the cavity and the orbit, are evidences of such destruction as might result from syphilitic osteitis. These evidences of disease, excepting the cavity in the frontal bone which, I may say in passing, has nothing to do with leprosy, are similar to those found in the Florida Indians. The latter evidently had contracted syphilis through their connection with the Spaniards of Mexico.

Mr. Culin informs me that there is one distinctly connecting link between the Mexican Aztecs and the Asiatics, besides that evolution of pottery which I have described above. It is the game of *patoli*. This game is played in Mexico thus: there is one stave held with the hand, across three parallel staves; it is used as a bat to throw beans or balls up to be caught, when falling back, upon a cloth; a tally is kept, according to the position in which these balls fall on the cloth. The three parallel staves are marked with an arrow, the single stave which crosses the parallel ones has the mark of a bow on it. The game was originally played not with staves, but with arrows, the warrior always holding three arrows with his bow. This explains the mark of the arrow on the staves. That the same game, absolutely the same, should exist in Asia can not be due to chance.

It seems to me that the intercourse, whatever it may have been, to whatever degree it may have existed, between America and Asia is the only thing which could, after what I have said before, make it admissible that leprosy existed here before Columbus came. Certainly syphilis existed here, and, if it did, it could not have come from anywhere else but Asia. Therefore, in spite of the absence of every proof of the presence of leprosy here, before the Conquest, we must consider the question as still in doubt.

The oldest center of leprosy in America, is Old Colombia, (Granada, Venezuela and Ecuador.) Carthagena of the Indies was a most ancient focus of leprosy. Mr. Luther F. McKinney, U. S. Minister to Bogota says: "This country is cursed with leprosy, there being about 24,000 lepers in Colombia alone. Unless something is done to isolate those who are afflicted, and means taken to prevent the marriage of lepers, the whole country will eventually become a race of lepers."

The librarians of the National and the University Libraries of Ecuador, can find nothing for me, in any way connected with the origin and history of leprosy in Spanish America. These libraries are lamentably small and imperfect.

I am informed by the British Minister in the same country that all matters relating to leprosy have been extensively treated in Colombia where as I mentioned above, the disease is very widely spread. In Ecuador, he says the number of cases is comparatively small.

Dr. Zeballos, the Argentine Minister in Washington, writes that although he is a student of South American history he does not remember having read that leprosy existed among the Indians of his country previous to the advent of the Spaniards.

NOTE.—Brinton says: "But an obscurity certainly hangs over the ethnography of Florida at the period of the discovery. A large part of the peninsula was peopled by a tribe whose language stood alone on the continent, the Timucuas, and which became extinct generations ago. They are described by the Spanish and French explorers of the sixteenth century, as quite a cultured people and at that time as building mounds and erecting their houses upon them."

Dr. Juliano Moreira, physician to the Hospital Santa Isabel, Bahia, Brazil, says that the natives there before the Portuguese colonization, the Tupis, the Krars (Keras), the Goytacazes, the Guerens, the Gucks, the Parecos, the Guaycurus, the Lengoas and the Aruwacks, were certainly not leprous and it is incontestable, in his opinion, that among the Indians now living, there is no disease that can be construed into leprosy.

Dr. Bibb, of Saltillo, Mexico, says that among the most prominent and best informed men in the city of Mexico, the general opinion is that the disease was introduced there by Chinese.

Dr. J. B. Terres, Vice Consul-General to Hayti, thinks that nothing has been written by any native of that island, nor by any foreigner, either as to the origin and history of leprosy there. However, it is supposed by old physicians, with whom the Vice-Consul spoke on the subject, that it was introduced by the Spaniards; but there is no proof of that. The same gentleman states that leprosy is very rampant in that island, and that no precaution whatever is taken to isolate the cases. There is no leper hospital, and the lepers are allowed to circulate without let or hindrance.

Dr. Beaven Rake (Report on Leprosy, Trinidad Leper Asylum, 1890) quotes from Leloir, page 300, that Drs. Magalhoes and Mayrinch state that before the discovery of Brazil there was no leprosy among the Indians, nor subsequently in those who did not mix with the foreigners.

Beaven Rake says that of 216 lepers treated in the asylum, 74 or rather more than one-third were coolies. Of 138 reported from outside, only 29 were Hindus. No doubt there are more, for coolies when free do not seek medical advice so readily as other patients, unless they are paupers and wish to be maintained in the colonial hospital or leper asylum. "On the whole, then," says Rake; "the proportion of coolie lepers may be fairly taken as one-third. The question is, Where do they get the disease? We are told that there are some 250,000 lepers in India, and it is therefore hardly fair to suppose that all the Hindus who develop leprosy in Trinidad become infected here. It is far more likely that in some or many of them, the disease is already incubating when they land here, though it may not be evident enough to insure rejection after medical examination."

I have received a letter from Mr. McKinney, U. S. Minister to Colombia from which I extract the following:

"This country was first discovered (I mean Colombia) by a Spaniard, Gonzales Jiminez de Quesada, who started from the coast with a large body of men to explore the interior. He discovered the beautiful plain in which Bogota is situated, and founded the city of Bogota August 6, 1538. Some time after this, I do not know how many years, he was attacked with leprosy and died of it, I think about 1578. This was the first case known in Colombia, and attacked the first Spaniard who entered the country. In a late conversation with the acting Minister of Foreign Affairs, an intelligent gentleman, he said: 'Leprosy was not brought here by the Spaniards, but was developed here by the mixture of the races.' I can not see, however, that this can be true when the first Spaniard who landed in this country, contracted the disease and died of it. It seems very plain to me that this man had the disease in his blood, and it developed itself here. It is a well-known fact that leprosy had long before this existed in Spain, though at that time it is said to have been extinct. But while the disease is hereditary, it sometimes skips a generation, and this man may not have known his blood was tainted with the disease. This is the first history of leprosy in Colombia. "About 1550 a priest was sent by this same man to Africa, and he brought negroes to Panama and that was the first introduction of the black race into Colombia. (See note.)

"But from all the facts I have been able to gather, the leprosy can not be attributed to the negroes. There is very little pure blood of any race in Colombia; the people are a mixture of the Spaniard, Indian and negro races. Whether this mixture of the races, as some here assert, has caused the rapid spread of the disease, I am not competent to judge. There are in Colombia now, from 25,000 to 30,000 lepers; some put it at 60,000, but the weight of authority is in favor of the former numbers. The doctors here in Bogota declare universally, as far as I have talked with them, that leprosy is not contagious except by inoculation and heredity. But there are differences of opinion about this, and you are better able from your study of the subject to answer that question. Considering the large number of lepers in Colombia, the trade carried on with the United States, and the large number of Americans who are constantly coming here and returning to the United States, this is a matter of great importance to us, as it is likely in time to be carried to our country, especially as there is every year more or less marriage between the people of the two countries.

"I think one cause of the fearful spread of the disease is the poverty and filth of the people. Bathing is considered here more deadly than leprosy among the common people, and any filthy disease would find a congenial home among them. Another cause may be that the people are cursed with syphilis which was first brought among this people by the soldiers from Venezuela, during the early wars of independence. However, some say that those who have the one disease, are not so apt to take the other.[4] The government has so little money to expend for the purpose, that there is little done to isolate the disease, and though there are many schemes, and some hospitals for these unfortunates, they are scattered over every part of the country, and because of the laxity of sanitary regulations, they become beggars and vagabonds everywhere. I see them every day on the streets of this city. Unless something is done soon, the nation will become a nation of lepers and a menace to every civilized country. . . .

"In my opinion the day will come when leprosy will command the attention of the medical profession of America, far more than it ever has in the past. May the day be far distant when our fair land will be cursed by such a loathsome disease."

(To be continued.)

[4] That is the popular belief in Japan too.

THE ANTAGONISM BETWEEN CITRIC ACID AND CANCROID CELLS.

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Though on the eve of another convocation, I venture to supplement the interesting discussion of malignant growths, held at the forty-fifth meeting of the ASSOCIATION, by calling attention to some original experiments inaugurated by the writer several years ago. The conclusions, with some additional cases, are now presented as a possible solution of the difficulties which so often militate against the radical extirpation of these and other neoplasms.

None will dissent from the dictum of the Section that early interference is to be commended, but unfortunately the scalpel, so far as the patient is concerned, is a *dernier ressort*, and not until he has exhausted other methods does he appeal to the surgeon.

It need not be remarked that from their inception, cancroid and other succulent tumors are environed by juices and cells, proliferations from the embryonic (?) germ which seem to await only the irritation of caustic or knife to migrate and set up foci of

NOTE.—The first negro in Peru was with "the thirteen" of the Isle de Gallo, before the Conquest, and in 1536 (two years before Quesada's time) Maroon negroes were in that country. The privilege was granted to Pizarro by the King, to import negroes from Africa before Quesada's time.

infection elsewhere. May not these epithelial pearls, like the foliage of the agave, also contribute to the ultimate fruition of the central nucleus?

Fig. 141, page 528, of Virchow's "Cellular Pathology," while illustrating a solid mass of cancroid from a tumor of the lower lips, graphically displays these cells *in situ*. The distinguished author in the same connection says, concerning the differential diagnosis of these neoplasms: "If you attempt to distinguish cancroid growths from real cancer by the epithelial structure of their elements, you will herein give yourselves trouble in vain."

Hence, questioning the perspicacity of even the microscope, I am in the habit of classifying all facial tumors of the aged as at least suspicious and demanding immediate extirpation.

With the primary purpose of more accurately defining the boundaries of such growths, I employed a saturated solution of citric acid hypodermatically. It was found that the liquid introduced at any point near the periphery seemed to possess an elective affinity for the diseased structures and that it blanched and brought the same into bold relief. This will be recognized as a desideratum in operations about the face where the perplexing alternative usually presented is a sacrifice of symmetry or the probability of an early recurrence. Continuing the injections for several days, sometimes at the behest of the patient, it was further discovered that the area of induration and infiltration was measurably reduced. In some instances, as will be noted, no other surgical interference was required, and let me add that while the acid treatment enables the surgeon to make his incisions with greater precision and minimizes the danger of metastasis, it seems to be quite innocuous to normal tissues. The patient's experience is one of instant relief from the smarting and tension which attend certain neoplasms.

Among the cases previously reported was that of a man nearly 60 years of age, three of whose ancestors had succumbed to tumors of the face. In his own person a sessile growth as large as a filbert, having its apparent origin under the inner canthus of the left eye and leaving in its descent a broad cicatrix, was finally arrested at the junction of the ala of the nose with the cheek. In its new situation, enlargement became rapid and painful. Extirpation of the entire mass as outlined by the preliminary injection would have involved half of the nasal ala and not a little cheek, besides inviting profuse hemorrhages. Repeated instillation of the acid solution, during three or four weeks, reduced the dimensions to that of a small pea. The resultant scar was insignificant, nor had there been any evidence of recurrence up to the period of his accidental death six years later.

Another of the earlier cases was a so-called rose cancer which extended from one eyebrow to the other, and vertically more than an inch. Adequate incisions would have encroached upon both eyebrows, leaving an unsightly cicatrix at best. After a number of acid treatments the entire growth was included in an ellipse of no greater horizontal diameter than eight or nine lines.

Of more recent cases, I now note an undoubted epithelioma of the lower lip which involved a portion of the chin in its dart-shaped induration. Similar procedures relieved the chin and enabled me to include the remainder of the tumor in a small V-shaped incision. Total extirpation in the beginning would have necessitated a formidable operation with plastic accessories. The gentleman's impatience alone prevented the attempt at radical cure with injections.

A further opportunity for testing the acid treatment occurred in the person of a lady over 60 years of age from whom I removed a scirrhus, left breast. Her financial condition precluded a lengthy sojourn in the city, and at the same time rendered any preliminary treatment impossible. Compensation for this was attempted by generously retrenching the flaps and bathing the parts subsequently with a strong acid solution. Union was delayed because of insufficient approximation, and some indurated portions of the integuments.

Yet a few injections *in situ* removed the latter, promoted healing and seemed to soften up one of the axillary glands which had escaped detection during the operation. A necessarily broad but healthy cicatrix was obtained in a few weeks, nor was there any recurrence at the wound site. Fifteen months later, the lady died of peritoneal dropsy which was regarded as metastatic and malignant.

More recently it was my privilege to treat a nose of generous proportions from which a Kentucky surgeon had excised a neoplasm some years before. After a brief respite it broke out again and again, and for the last two years had resisted all the blandishments of the *ars medicatrix*. Among other remedies, and notwithstanding his dual rôle of deacon and paterfamilias, some unbelieving Æsculapius had unsuccessfully subjected the gentleman to specific treatment. During the last few months of domestic or no treatment, its history was that of an open sore, either hemorrhagic in tendency and habit, or emitting sanious discharge which seldom rose to the dignity of a scab. Removal of the bit of paper which covered it revealed a raw, red and glazed surface, about five or six lines in diameter, surmounting an indurated base of much greater dimensions; in fact a typical epitheliomatous ulcer. Complete excision of the growth would have impaired the symmetry of the organ, by depriving it of the entire right ala. Hemorrhage and all unpleasant sensations ceased after the first injection, while cicatrization and atrophy proceeded *pari passu* until he was discharged cured.

In one instance, injections were thrown into the substance of a large colloid carcinoma, resulting in the disintegration of portions of it. It was too late, however, to prevent systemic infection or to arrest the growth.

ORIGINAL INVESTIGATIONS ON THE NATURAL HISTORY, (SYMPTOMS AND PATHOLOGY) OF YELLOW FEVER. 1854–1894.

BY JOSEPH JONES, M.D., LL.D.
NEW ORLEANS, LA.

(*Continued from page 595.*)

CHAPTER IX.

ALTERATIONS OF THE BLOOD IN YELLOW FEVER, INDUCED BY THE SUPPRESSION OF THE FUNCTION OF THE KIDNEYS AND LIVER, AND THE RETENTION IN THE BLOOD OF THE CONSTITUENTS OF THE URINE AND BILE.

The constitution of the blood is more or less al-

tered in every case of yellow fever, but the changes are observed in greatest intensity in those cases in which there is partial or complete suppression of the action of the kidneys.

By careful experiments I have determined that during the active stage of febrile excitement in yellow fever, not less than 600 grains of urea are excreted by an adult during twenty-four hours. As the action of the kidneys is in many cases wholly arrested for various periods, ranging from one to four days before death, the whole amount of urea accumulating in the blood and remaining in the system may range from 600 to 2,400 grains. The gastro-intestinal mucous membrane, in such cases, eliminates the urea, both as urea and as carbonate of ammonia; and both these substances frequently enter into the constitution of black vomit, which in many cases is intensely alkalin from the presence of carbonate of ammonia, in sufficient quantities not only to neutralize the acid of the gastric juice, but also to give forth such strong fumes as to be visible as a dense white cloud, when a rod dipped in hydrochloric acid is held over the black vomit, freshly discharged from the stomach or removed from the viscus immediately after death.

The presence of ammonia in the fluids of the stomach in such cases is clearly not due to subsequent changes, but is referable to the decomposition of the urea in the stomach, after the manner which has been pointed out by Frerichs, Bernard and other observers. In such cases the blood in the cavities of the heart and in the large vessels is black, and does not form a clot, and the solvent properties of the ammonia are manifest not only in the dissolution of the fibrin, but also in the altered appearance of the colored blood corpuscles, and in the rapidity with which they disappear when the blood is allowed to stand.

One of the most striking facts which arrests the attention of the observer in post-mortem examinations in this disease, is the apparent abundance of the blood in the various textures, its fluidity, and also the bright arterial hue which it rapidly assumes upon exposure to the atmosphere. This condition is referable to the distension of the blood vessel system, in consequence of the failure of the kidneys to eliminate the watery elements, as well as to the action upon the blood of the excrementitious materials. While it is true that urea is present in healthy blood in small amount, as may be determined not only directly by chemic means, but also by a simple calculation, as has been done by Dr. Goodfellow ("Lectures on the Diseases of the Kidney, generally known as Bright's Disease and Dropsy," London, 1861, pp. 67–69), I have at the same time, by careful analysis, shown that the urea is greatly increased in the blood of yellow fever, amounting in some cases to near 2 per cent. of the whole mass of blood.

The following is the calculation of Dr. Goodfellow, with reference to the amount of urea which must necessarily be present in healthy blood:

No physiologist denies that the urea is merely separated from the blood. It is universally acknowledged that the kidneys have no converting power. It can not be supposed, therefore, that all the urea contained in the blood goes directly to the kidneys; and consequently it follows, that only that quantity which passes through these organs is freed from this excrement at every successive revolution of the circulation. The following calculation will show this clearly: We will take the case of a healthy man, excreting every twenty-four hours about 360 grains of urea. This quantity divided by 24 gives 15 grains every hour, and still further reduced, one-fourth of a grain every minute. We will suppose the quantity of blood in his body to be thirty pounds, and that it takes from a minute to a minute and a half, to complete the circulation. We will suppose, moreover, that the kidneys constantly contain about three ounces of blood, and that about five ounces pass through these organs every minute. As we get, then, a quarter of a grain of urea from the five ounces passing through the kidneys, in this space of time, it is reasonable to infer that there will be left in the remaining mass of blood (475 ounces), $23\frac{3}{4}$ grains of urea.

The quantities which Dr. Goodfellow has conjecturally assumed are, in the one case too small, and in the other too large, and he has subsequently added the following correction of the preceding calculation:

In one of the elaborate tables, in Dr. Parkes' work on the urine, it appears that the mean amount of urea secreted by males in twenty-four hours, as furnished by 250 analyses, made by twenty-four eminent chemists, is 512.4 grains, varying from 286.1 grains, the lowest, to 688.4 grains, the highest; and in females, from 260 to 400. The amount of blood (thirty pounds) is more than the area of the heart and blood vessels in a man of average size can accommodate, notwithstanding that it is the quantity as calculated by eminent physiologists. The amount of blood expelled from the left ventricle at each contraction, as supposed by Valentin (five ounces), and Volkmann (six ounces), is probably too large. The calculation is made on the supposition that at each contraction of the left ventricle from two and one-half to three ounces of blood are expelled, and that of the mass of blood so thrown into the aorta, from half a drachm to a drachm is propelled by the kidney, and that the same quantity makes its exit simultaneously by the vein. Supposing, then, that there are from seventy to seventy-five ventricular contractions in a minute, the total quantity passing through the kidney during this space of time, will therefore amount to from five to eight ounces. The calculation does not require the demonstration of the exact quantity which is always in the blood, but that there necessarily must be some urea constantly in it, and more than is generally supposed. The excretion of urea is always going on more or less quickly, and also the formation of this substance from the waste of the protein tissues, and from the same principles in the food, in greater or less quantity according to the state of the body, as to exercise or food; and as its transmission into the blood through its principal conduit, the thoracic duct (M. Wurst, as quoted by Bernard), is also constant, it follows that there must be more or less of urea in the blood at all times.

With respect also to the length of time required to complete the circulation, some facts of importance have been omitted in the calculation. Now that we have more correct notions with respect to secretion, most physiologists will show that although a complete revolution of the circulation may be effected in from a minute to a minute and a half, as deduced by calculation (Valentin and Volkmann), and by experiments (Poiseuille, Bernard and Blake), the blood really moves with varying velocity in differ-

ent secreting and excreting organs; influenced as the circulation is probably by the peculiar affinities, and the diameter and arrangements of the capillaries and other minute vessels. We observe that every secreting organ has some peculiarity in the arrangement and size of the vessels, and in the thickness of their walls. This arrangement must affect to some extent the velocity of the circulation, and affect also the character of the blood plasma transuded into the tissue, from which the secreting agents are to separate the peculiar constituents of the secretion. Taking the double circulation of the blood in the kidneys into consideration, then, it is probable that the blood does not pass through them so quickly as through some other organs, and that the whole mass of blood does not pass through the heart every minute or minute and a half, although a quantity equal to it may do so; some portions may, in fact, pass twice or oftener through the heart in this space of time.

On the assumption that there are twenty pounds of blood in a man's body, and that one ounce and a half of urea is excreted in twenty-four hours, Marchand calculated that the blood contained the 15-360 part of its weight of urea.*

The results of these investigations on the condition of the blood, and upon the chemic constitution of black vomit in yellow fever, sustain the view held by MM. Prevost and Dumas, Claude Bernard, Ricord, and other physiologists, that urea after having been generated in the blood and tissues, is simply excreted by the kidneys, and does not confirm the doctrine taught by M. Herman, Dr. Beale and others, that urea and uric acid are not only eliminated but are formed by the renal tissue. And careful physiologic experiments which I have performed have been confirmed by the results of the inquiries of M. Gréhaut (*Archives de Physiologie Normale et Pathologique*, Sep et Novembre, 1870—*American Journal of Medical Sciences*, October, 1871, p. 530), which extended over several years. According to this careful observer, immediately after nephrotomy in the fasting dog, urea begins to accumulate in the blood, its increase being manifest within three hours after the operation; the increase of weight of the urea in the blood and in the lymph, twenty-four hours after the ablation of the kidneys, is equal to the weight of it that would have been excreted by the healthy fasting animal in the same space of time; the accumulation of urea in the blood in the hours that succeed nephrotomy, follows the same march as after ligature of the ureter. After ligature of the ureter, the quantity of blood circulating through the kidney of the side diminishes; under normal conditions the blood of the renal vein always contains less urea than the corresponding artery; in an animal in which the ureters have been ligatured, the renal venous blood obtained twenty-four hours after the operation contains as much urea as the renal arterial blood, so that the tissue of the kidney neither excretes nor secretes any more.

Finally, M. Gréhaut has shown, that ligature of the ureter and nephrotomy are two operations that are identical in their results; they both suppress the eliminative function of the kidneys, while they form no obstacle to the formation of urea, which takes place outside of the kidneys.

Whatever theory may be held as to the cause of the peculiar phenomena, denominated uremia, whether that of the poisoning of the blood by the urinary constituents generally, or by urea especially, or by the product of its decomposition, viz., carbonate of ammonia, or by the edema of the brain from the accumulation of the watery constituents of the blood, attended by serous apoplexy and irritation of the brain and its membranes; it is evident that in many cases of yellow fever, the fatal issue is determined chiefly by the retention in the blood of the constituents of the urine. To this cause must be attributed to a great extent, the restlessness, nervous agitation, intoxication, delirium, convulsions and coma characterizing the stage of calm or depression in many cases of yellow fever.

NOTE.—Dr. Carl R. Braun, in his valuable work on the "Uremic Convulsions of Pregnancy, Parturition and Childbirth," has given the following summary of the state of our knowledge at the time of his work, which we here reproduce from the important bearing which it has upon similar phenomena in yellow fever:

"Eclampsia parturientium is commonly the result of uremic intoxications arising from Bright's disease of the kidneys, and produced mostly by carbonate of ammonia in the blood, perhaps also by extractive matters in the urine.

"This appears from the following analysis:

"*a.* All observers at present agree that urea retained in the blood is not, as such, the cause of the uremic symptoms.

"*b.* Lehman (Physiol. Chemic., Vol. II, s. 245) and Frerichs almost simultaneously and independently of one another arrived at the conviction that cause of the uremic phenomena is to be sought for in the ammoniacal contents of the blood, produced by the transformation of urea into carbonate of ammonia.

"*c.* The investigations of Frerichs, Litzmann, the author (Dr. Carl R. Braun), Heller, Kletznsky, Ofpolzer, Gegenbauer, and others have demonstrated that in the eclamptic, urea and carbonate of ammonia developed by its decomposition are generally found in considerable quantities in the fresh blood, that from the presence of these materials in the blood the occurrence of uremic eclampsia may be prognosticated, and that these substances are observed also in the blood of children born of uremic mothers.

"*d.* Chemic analysis, however, can not always, even during the most violent eclampsia, discern the presence of carbonate of ammonia in fresh blood, as is shown in an observation made on August 4, 1854, by Gustav. Braun and Heller and communicated to me. The blood, drawn from a vein after the sixteenth eclamptic fit, separated itself into clear serum and a light red, bulky, moderately consistent clot, covered with spongy fibrin, tinged yellow by a gall pigment. The strongly alkalin serum had a specific gravity of 1025, and contained much casein and bilephæin. The serum filtered after being treated with alcohol, contained little urea and sugar, much cholesterin and choliac acid. The blood then had not the uremic, but the cholemic constitution, as it contained no carbonate of ammonia, but all the elements of the bile. This observation, although it does not stand alone, can not be used to invalidate the theory of the very frequent coincidence of eclampsia and uremia. It rather points out that the excrementitial elements of bile may produce cholemia in the living body, and be likewise a cause of eclampsia.

"*e.* According to the very careful experiments of Mettenheimer (Mettenheimer, C., Archiv. f. Voissenschrift liche Heilk. I. 4,) Beneke, and Reuling, (Reuling, W., Inaug. Diss., Gussin, 1854,) all healthy and sick individuals have the power of expelling ammonia under certain circumstances. In the lungs of the healthy, ammonia is in general absorbed rather than expelled; hence the vapors produced in holding before the mouth a glass rod wet with dilute muriatic acid, are never capable of indicating the degree of uremia and Bright's disease.

"*f.* Normal blood when fresh drawn does not contain ammonia, as Reuling has proved by a very simple but very delicate qualitative method with logwood paper. In several diseases, as caries of the teeth, angina tonsillaris, typhus, pyemia, ischemia, and blenorrhea of the urinary bladder, we sometimes find in the blood carbonate of ammonia, just as in uremia and Bright's disease. Hence carbonate of ammonia in the blood can not be regarded as a characteristic indication of uremia, and in many constitutions uremia may be produced by extractive matters in the blood.

* Lectures on the Diseases of the Kidney, generally known as Bright's Disease and Dropsy, by S. F. Goodfellow, M.D., Ch.C., London, 1861, pp. 67-69.

"*g*. After weighing the objections raised against the theory of the intoxication of the blood by carbonate of ammonia, Litzmann has arrived at the following conclusions: the fresh blood of healthy individuals never contains ammonia. In the majority of the cases of uremia, the blood does contain ammonia, which has been formed by the decomposition of urea formed in the blood and retained in it, or by the decomposition of the urea that has been secreted in the urinary passages and has returned into the circulation by absorption. The presence of ammonia in the blood is indicated by the increased ammoniacal contents of the expired air; but this increase can not of itself be considered a proof, for it may be produced by the admixture of ammonia formed in the cavity of the mouth by decomposition of the oral secretions and of remains of food in the case of carious teeth, etc. In the vomited fluids and the contents of the intestine in cases of uremia, carbonate of ammonia is not unfrequently discovered. Sometimes there is an alkalin reaction of the sweat (Litzmann, Rühle). The urine may contain ammonia, even when it has an acid reaction (Brüke). But, on the other hand, presence of ammonia in the blood is not by any means a sign of uremia exclusively, for it has been exceptionally observed (Reuling) in other diseased conditions (typhus and pyemia) when the urinary secretion was not disturbed. On the other hand, cases undoubtedly occur where notwithstanding obstructed secretion of urea by the kidneys, and the occurrence of all the characteristic symptoms of uremia, the blood does not contain any ammonia and the ammoniacal contents of the exhaled air are not increased (Reuling), but when, on the contrary, undecomposed urea is found in the transudations from the blood, and in the sweat especially, may be in such quantity as to be left on the skin in the form of white crystalline dust. (Schottin, Archiv. f. Physiol. Heilkunde, Vol. x, xi, xii; Fiedler, De Secretion Urinæ per Cutum, Dissit. Inaug, Med., Leipsic, 1854). The cause of uremic phenomena can not therefore be sought for in the decomposition only of the urea retained in the blood into carbonate of ammonia.

"*h*. Whether the accumulation of extractive matters in the blood, in consequence of suppression of the urinary secretion is the cause of eclampsia (Schottin, Reuling) or not, is a question for the future to decide. Hoppe found, in a case of a uremic poison, besides urea, three times the usual quantity of extractive matters in the serum of the blood, and also the muscles saturated with their excretory products. The quantity of kreatin obtained from them was five times as much as the normal amount.

"*i*. Wieger, on these grounds regards uremia not so loosely as the ancients, who held it to be a metastasis of the urine, and not so exclusively as Frerichs, who considers it an intoxication by carbonate of ammonia, but as a consequence of Brightian exudation into the kidneys which in its chemic relations is characterized by retention of water and excrementitial matters in the blood, which itself, from the loss of blood corpuscles and albumin is impoverished in these elements. But it is uncertain whether the chief part in the combined operation is to be ascribed to the excess of serum or to the diminution of the albumin and blood corpuscles. Hydremia, however, is never the cause of the nervous symptoms, but has only a predisposing action.

"*j*. From the results of chemic analyses it is certain that in uremia, carbonate of ammonia and urea are often found in the fresh blood and are rarely wanting. Although the essential nature of uremia is always coming into clearer light in consequence of the rapid strides of organic chemistry, yet we know enough already to assure us that eclampsia parturientium is always caused by the presence in the blood of an excess of excrementitial matters and also generally by uremic intoxication."

To the action of the same cause also may certain changes of the blood be referred, as the dissolution of the fibrin and the rapid changes which the colored blood corpuscles undergo after death and after removal from the living body. During the healthy action of the kidney, as has been shown by Simon, of Berlin, and Bernard, of Paris, fibrin disappears from the blood passing through this organ and is most probably converted into albumin, and the increase of the fibrin in Bright's disease has been referred to the cessation of this change of the fibrin in the diseased kidney; but in yellow fever, notwithstanding that the function of the kidneys may be wholly arrested, there is almost complete disappearance of the fibrin of the blood, so profound is the action of the defibrinating cause. That very important changes take place in the blood during the healthy action of the kidneys, from the separation of the urea and other constituents of the urine, is evident from the fact observed by Bernard, that when the kidney is active, the blood issuing from the renal vein has a bright sparkling red color, but if the secretion is more or less diminished or altogether suppressed, not only is the blood issuing by the vein dark colored, but the whole organ assumes a purplish tint, more or less deep. This change of color has, with some show of reason, been referred chiefly to the non-separation of water during the suppression of the function of the kidney.

Nasse has shown that if blood be diluted with water it assumes a dark red color; if the blood be previously dark colored, it becomes still darker on the addition of water; and if the blood corpuscles be examined under the microscope, they are found to be distended, to have lost their discoid form, and to have become spherical; the blood collectively therefore must appear darker, since each individual corpuscle has become converted into a spherical mirror, from which the red rays are scattered and reflected.

It has been shown by the experiments of several physiologists, that when the red blood corpuscles are in normal amount, a certain quantity of urea added to the blood scarcely produces any effect upon them; but on adding the same quantity to the same amount of blood, from which a considerable number of blood corpuscles had been withdrawn, a very striking effect was at once observed—the corpuscles rapidly assumed a vermilion tint, and sank to the bottom, presenting the appearance to the naked eye of fine vermilion; and on examining this sediment with the microscope it was found to consist entirely of red corpuscles, reduced to about a sixth of their natural size. The effect of the urea seemed to be in exact relation to the quantity of red corpuscles in the dependent portions of the blood, resembling fine vermilion, as in the preceding experiments, and this appearance must not only be referred to the loss of fibrin, but also to the action of the urea.

The blood of yellow fever containing more or less urinous excrement, and with a physical alteration and actual diminution of both the albumin and fibrin, is not only ill adapted to the nutrition of the organs, and actually conveys to the stomach materials which when eliminated alter so completely the properties of the gastric juice, as not only to arrest digestion, but also to irritate and corrode the mucous membrane; but it is also by its physical and chemical constitution unsuited to the maintenance of the general capillary circulation.

Both Bernard and Poiseuille have observed that fibrin when in intimate mixture with a due normal proportion of albumin, facilitates the movement of the blood; but if the fibrin be withdrawn the blood globules fall to the most dependent part, and obstruct the capillary circulation.

Bernard has recorded the observation that when the capillary circulation in the web of the frog's foot is examined under the microscope, the globules are seen suspended nearly uniformly in the liquor sanguinus; but if we examine this circulation in an animal whose blood has been defibrinated, we see the globules fall to the most dependent part, while at

the superior parts, pure liquor sanguinis alone circulates. If a horizontal vascular trunk bifurcates in two divisions, not situated on the same horizontal plane, the lower branch will be plugged by the accumulation of the globules, while the upper branch will be full of serum.

Not only are similar causes active in producing the capillary congestions which are so characteristic of yellow fever, but the altered albumin and fibrin coagulate in the secreting and excreting structures of the liver and kidneys after its transudation through the walls of the capillaries and biliary and urinary tubes. To these changes of the blood, therefore, must be referred, to a great extent, the suppression of the functions of the liver and kidneys; for it is very evident that in the case of the liver the obstruction does not exist in the biliary or hepatic ducts, but in the biliary tubes.

It is evident that certain changes in the blood, as well as certain nervous symptoms in yellow fever, are due to the retention of bile in the blood.

Next to black vomit, jaundice occurring in the febrile stage of yellow fever is the most fatal symptom. Many observers regard jaundice as unfavorable in proportion to the earliness of its development; some writers considering jaundice as surely indicative of a fatal termination, when appearing upon the first or second day, or up to the third, fourth or fifth day.

Mr. Maher says that the period at which jaundice makes its appearance during the course of the disease is, according to the observations of Dr. Belot, a prognostic sign of great certainty. When it appears toward the third or fourth day, death will infallibly ensue; if it occurs toward the fifth or seventh day, the probability of a fatal issue is greater than that of recovery; finally, when it manifests itself only after the seventh day from the period of attack, recovery is almost certain (*Rapport Médicale sur l'Epidémic de Fièvre, Jaune*). The most valuable statistics with reference to this symptom have been furnished by Daniel Blair (Some Account of the Last Yellow Fever Epidemic of British Guiana." Third Edition, London, 1852, pp. 79-83). According to this accurate observer: "Yellow skin was always a sign of great intensity of disease. Among the 2,071 milder and graver cases, 385 had *yellow skin;* and of these 385, 178 died. Thus the proportion of cases in which the symptom appeared was 18.54 per cent., and the rate of mortality of the symptom was 46.23 per cent.

The following table will show the number of cases in which yellow skin was observed on different days of the disease, the number of deaths, and rate of mortality for each day, and rate per cent. of symptoms:

YELLOW SKIN AND BLACK VOMIT.

	122 Deaths.						22 Recoveries.					
	40 Cases Simultaneous.		45 Cases preceded.		22 Cases Succeeded		6 Cases Simultaneous.		6 Cases preceded.		10 Cases Succeeded	
	Day of Disease.	No. of Cases.	No. of days preceded	No. of Cases.	No. of days succe'd	No. of Cases.	Day of Disease.	No. of Cases.	No. of days preceded	No. of Cases.	No. of days.	No. of Cases.
3d	3	1	28	1	25		3	1	1	3	1	5
4th	14	2	10	2	4		4	1	2	2	2	2
5th	9	3	5	3	2		5	2	4	1	3	2
6th	10	4	1	7	1		6	2			4	1
7th	3	5	1									
8th	1	0	0									

Black vomit, although a very unfavorable symptom, and more so than yellow skin, being as 75.68 to 46.23, is still not necessarily fatal. Out of the 366 cases of it, 277 only died, giving the centesimal mortality just stated, viz., 75.68. Yellow skin and black vomit were closely associated as to the time of their appearance, but the former was generally the antecedent (fortunate for the patient when otherwise). Thus in 139 ascertained cases, the former preceded the latter in 51 instances, appeared simultaneously in 46, and succeeded it in 42 instances. The double symptom of yellow skin and black vomit was of all others the most dangerous, and especially when the latter succeeded the former, and within twenty-four hours. The co-existence of these symptoms was observed in 144 cases, being 6.95 per cent. of the 2,071 mitior and gravior cases admitted to the Seaman's Hospital. Out of these 144 cases, 122 died, making the mortality of the conjoined symptoms 84.72 per cent.

The following table shows the day of the disease on which yellow skin and black vomit occurred simultaneously, also the number of cases in which the former preceded or succeeded the latter, and the number of days it so preceded or succeeded:

TABLE SHOWING THE NUMBER OF CASES IN WHICH YELLOW SKIN WAS OBSERVED ON DIFFERENT DAY OF YELLOW FEVER, THE NUMBER OF DEATHS, AND RATE OF MORTALITY FOR EACH DAY.

Day of Disease.	1	2	3	4	5	6	7	8	9	10	11	12 13	14	15	Unascertained.
Total number of cases	8	16	46	89	86	66	30	18	7	8	5	.	3	1	2
Number of deaths	1	4	18	44	53	27	13	10	1	3	2	.	.	.	1
Rate of Mortality	12.5	25.0	39.01	49.45	61.62	40.90	43.33	55.55	14.28	37.5	40.	.	.	.	.
Rate per cent. of Symptoms	0.38	0.76	2.22	4.30	4.15	3.14	1.45	0.87	0.34	0.38	0.29	.	0.14	.	.

I have confirmed, by careful chemic analysis of the blood, and of the nervous structure and organs, the view held by some pathologists, that the yellow hue in jaundice observed in many grave cases of yellow fever is due to the presence of bile in the blood. By careful post-mortem examinations, as well as by attentive observation of the amount and chemic constitution of the urine in this disease, I have been able to refer the accumulation of the bile in the blood in this disease to two causes, viz., structural alterations of the liver, attended with desquamation of the excretory cells, obstruction of the biliary ducts, with altered fibrin and albumin and oil, and

the accumulation of free oil in the excretory cells, and structural alterations of the kidney, resulting in impairment if not total suppression of its function.

Bile is a very common ingredient of the urine in yellow fever, even in those cases which terminate favorably, and as long as the functions of the kidneys are fully and freely performed, the blood may be relieved from any great accumulation of bile, even when the lesions of the liver are well marked, and from this cause the urine may be loaded with bile. When the kidneys cease acting, the bile as well as the urinary constituents rapidly accumulate in the blood, and certain changes in the physical and chemical characters of this fluid are referable to the bile, as well as to the urinary constituents.

In order to ascertain the effects upon the various functions resulting from the absorption of a large quantity of bile into the blood, but particularly with the object of tracing what becomes of the bile in the blood—whether it is transformed, or is excreted as bile, and, if transformed, what may be the nature of the changes it undergoes—Frerichs performed a series of experiments, the general results of which were as follows: some of the animals died under symptoms of violent dyspnea (obstruction of the capillaries of the lungs), owing to the entrance of air into the lungs, or to the too great consistency of the injected fluid; twenty-nine of the experiments, however, succeeded in such a way that their results could be made use of. In no case did any remarkable derangements of the nervous functions follow the injection; in no case was stupor, convulsions or retardation of the pulse observable; vomiting, however, occurred repeatedly in about one-fourth of the experiments, and in some of these cases also the injection of the bile was followed by some drowsiness. The character of the urine which was voided after the injection varied; sometimes it contained a larger or smaller quantity of coloring matter, and at other times it contained none; the former was the case in nineteen, and the latter in ten, of the twenty-nine experiments. The urine containing coloring matter was always passed in small quantity; it was of a greenish-brown color, became turbid upon cooling, and then appeared green, rapidly depositing flakes which, under the microscope presented a finely granular appearance. When collected upon a filter, this deposit formed a dark grass-green layer, which dried readily, and which, when recently dried, exhibited the characteristic properties of the coloring matter of bile, becoming decomposed by the action of impure nitric acid, or by a mixture of sulphuric and nitric acids, with a lively play of colors of green, blue, violet and red. The reaction of the urine was, in most cases, neutral or alkalin; the removal of the flakes of coloring matter was speedily followed by an abundant deposit of triple phosphates; the specific gravity of the urine varied. When the kidney is examined after death, in these cases, the tubes are deeply tinged by the bile contained in their secreting cells, and some tubes are nearly or quite filled with cells which have been thrown off, while others have been formed upon the basement membrane beneath them.

Dr. Johnston concludes from these facts, that when the blood circulating through the kidneys contains an excess of bile, the renal cells, in striving to eliminate these materials, become deeply tinged by it, and many of them are so far modified as to be shed by a process of desquamation.

The bile exerts a direct effect upon the kidneys, without doubt, inducing congestion and desquamation of the excretory cells in yellow fever, but the albuminuria, hematuria, and even total suppression of the functions of these organs, can not be referred wholly to the direct irritant action of the biliary products, but must, as in the albuminuria and desquamative nephritis of scarlatina, be referred to other causes also, as the irritant action of the poisons exciting the diseases, and the morbid condition of the blood induced by the action of specific poisons, as well as by the altered bile. That the retention of bile in the blood is capable of inducing profound alterations in its constitution, is evident from the fact that in all cases of jaundice which last for a length of time, the blood becomes impoverished by a diminution in the proportion of red globules and fibrin, and a tendency is developed to hemorrhages from the various mucous membranes. While this tendency to hemorrhage is practically observed in conjunction with cerebral symptoms and other indications of blood poisoning in cases of jaundice, when there is no obstruction to the bile ducts, it also occurs in cases of mechanical jaundice of long standing, in which the immediate cause of death is not unfrequently copious hemorrhage from the stomach and bowels.

While Frerichs observed in his experiments no marked effects upon the action of the heart or nervous system, it is well established by clinical observation that the presence of bile in the blood frequently retards the action of the heart and diminishes arterial tension, the pulse becoming irregular and falling to 50, 40, or even 20, and presenting the same characters as the pulse in yellow fever; and it is equally well established that acute delirium, stupor, coma, muscular tremors and convulsions may supervene in cases of jaundice, where there is no obstruction of the ducts, as well as in cases of long standing mechanical obstruction. The fact that slowness of the pulse is not an invariable symptom of jaundice has been explained by supposing that it is due to one particular ingredient of the bile, which does not exist in the blood in all cases of jaundice. Thus, Röhring has shown by experiments upon animals that the biliary acid salts exercise a specific paralyzing action upon the heart and retard its action, while bile pigment has no such effect; slowness of the pulse, therefore, in jaundice has been referred to the presence in the blood of unchanged biliary acids. Notwithstanding that the blood of the human subject may be saturated with bile in jaundice, for long periods of time, without the manifestation of any serious cerebral symptoms, at the same time there are certain cases of suppression of the function of the liver, attended with cerebral symptoms of the most violent character, hemorrhage from the bowels, and profound alterations in the blood and urine, which can only be referred to the presence in the blood of the altered secretion of the liver.

The theory advanced by Dr. Austin Flint, that the cerebral symptoms in jaundice are due to the retention of cholesterine in the blood, does not solve the question; for if the retention of all the elements of the bile in the blood does not give rise to cerebral symptoms, it is impossible to understand how the symptoms can result from the retention of cholesterine alone, which is one of the constituents of bile.

Cholemic eclampsia, attended with jaundice, and

rapidly fatal tonic and clonic convulsions and coma, as well as that peculiar form of jaundice which is characterized by vomiting of blood, bloody stools, convulsions, coma and a rapid progress and fatal issue, evidently arise from the alterations induced in the blood by the constituents of the bile, and the products of their decomposition, resulting from acute atrophy of the liver, and present, not only in some of the symptoms, but also in the acute fatty degeneration of the liver. and infiltration of the organ with oil, and the alterations of the heart and kidneys, a striking analogy to the grave cases of yellow fever.

It is still a matter of dispute and doubt which element of the bile, or what products of the decomposition exercise the baleful influence on the nervous system in acute yellow atrophy of the liver. According to Frerichs, the formation of leucine and tyrosine, crystalline products of the decomposition of albuminous substances, may produce the nervous disturbances. Virchow, however, feels himself unable to grant this, because leucine and tyrosine are also found in typhus and exanthematous diseases, and may possibly be formed not until after death. Bamberger, on the other hand, thinks it more probable that they are produced by the acids of bile, and by the possible products of their decomposition; and Dr. Budd contends that they are due to some peculiar noxious matter evolved *in consequence of decomposition*, in the lobular substance of the liver; while Dr. Charles Murchison holds that the poison producing the cerebral symptoms is more probably generated in the blood and throughout the body generally than in the liver particularly.

The investigations of physiologists have shown that the liver not only excretes bile, but it forms grape sugar, and elaborates certain constituents of the blood, and exercises a continuous and important influence on the metamorphosis of matter constantly taking place in the blood and tissues.

That the arrest of the function of the liver checks or modifies the normal healthy metamorphoses of the blood and tissues is manifest, not only in the physical alterations of the blood in acute atrophy of the organ, but also in the great diminution of urea, and the appearance in large quantities of leucine and tyrosine, which possess a composition intermediate between it and the albuminoid components from which urea and uric acid are derived.

In acute atrophy of the liver, in acute phosphorous poisoning and in yellow fever, diseased states which have many symptoms and pathologic lesions in common, it appears that the albuminoid substances of the blood and organs, are split up into nitrogenous and non-nitrogenous combinations; but the combinations of the oxygen of the blood are not carried far enough to produce the final result of the normal oxidation in the healthy organism, and in addition to the formation of leucine and tyrosine, and of various nitrogenous substances, the composition of which is not perfectly known, *fat* results from these changes, which not only imparts an oily appearance to the blood, but also from the arrest of the oil globules in the capillaries infiltrates the textures of the liver, heart and spleen, and induces in these organs fatty degeneration.

(*To be continued.*)

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PERITONEAL SUPPORTS—(LIGAMENTUM PERITONEI.)

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(*Continued from page 598.*)

The hepatic artery produces only a slight elevation of peritoneum until it reaches the hepato-duodenal ligament, whence it aids in giving distinct outline to the border of Winslow's foramen on the right. By opening an adult cadaver, well prepared for inspection, and then carefully incising the gastro-colic omentum, one can see with perfection the shape and form of the left opening of Winslow into the lesser omental bag. To obtain the best view of Winslow's foramen, however, the ribs on both sides should be removed and the stomach lifted well up. Winslow's foramen will then be seen to have a distinct oval form as seen from inside the lesser bag, whose circumference is nearly all produced by peritoneal folds projected by the gastric and hepatic arteries.

The splenic artery, I must say, contrary to some anatomists, does not run into the gastro-splenic ligament until it nears its termination. Beginning at the celiac axis it at first passes behind the ascending layer of the transverse colon or the layer forming the lesser omental sac. It passes along the upper border of the pancreas in a spiral manner. When it approaches almost to the spleen, it suddenly bends and gains entrance rather to the phreno-splenic ligament than the right gastro-splenic ligament for the only arteries which distinctly run in the gastro-splenic ligament are the vasa breviæ. This splenic artery does not make very prominent folds in the peritoneum, or what it does make are very short.

The spermatic vessels make evident projecting folds of peritoneum and give rise to the ligamentum infundibulo-pelvicum, which is a sharp fold of peritoneum transmitting the ovarian and spermatic vessels and nerves. The spermatic vessels give origin to the intersigmoid fossa which can be best noted, so far as my experience is concerned, in a spare infant of six months. In such infants one can demonstrate by pulling on these vessels, exactly the formation of the intersigmoid fossa. The deep epigastric artery produces peritoneal folds of varying sizes and is of no particular importance except directly at the origin, where the vas deferens and spermatic vessels pass around its outer side. At its origin a fold of peritoneum is often manifest and no doubt aids in the final passage of viscera in hernia. The fold frequently makes a depression, a fossa or peritoneal pucker, which predisposes to the formation of hernia.

The veins produce some interesting folds of peritoneum which call attention to anatomic and pathologic points. The ascending vena cava bounds posteriorly the foramen of Winslow, and in embryos and the dog the vena caval boundary is plain and suggestive as to the mouth of the lesser omental sac. It produces a large, round, peritoneal fold. The inferior mesenteric vein is of both anatomic and pathologic interest. In the first place this vein varies very much in its termination. It empties into the superior mesenteric vein at the junction of the superior mesenteric and splenic veins or, finally, it empties into the splenic vein. It can be observed how this vein shifts from the middle line (superior mesenteric vein) over to the left side (emptying into the splenic). It may be stated that as animal life ascends, this

vein moves toward the left to terminate, and hence the emptying of the inferior mesenteric vein into the splenic is a sign of higher life—apes and man. The pathologic interest in the inferior mesenteric vein lies in the fact that, as it gradually shifts to the left, in the ascending scale of animal life it forms a well-known fossa—the fossa duodeno-jejunalis, which generally is about the size of a thimble and occurs probably in about 60 per cent. of subjects. The fossa is situated at the junction of the duodenum and jejunum. I have observed cases where the inferior mesenteric vein passed nearly two inches to the left of the junction of the duodeno-jejunalis and in this case there was no fossa, but still a prominent peritoneal fold produced by the vein. Hernia is liable to occur in this fossa. The folds of peritoneum produced by fetal remnants of vessels are often large. The urachus, the remains of the allanlois, does not generally produce manifest folds. The two arteriæ hypogastricæ may produce peritoneal folds over an inch high, especially near the bladder. Such folds could do no damage unless their mesentery either yielded, producing a pouch, or atrophied producing an aperture, allowing hernia to arise.

The round ligament of the liver, teres-hepatica passes from the transverse fissure of the liver to the umbilicus. This obliterated vein raises the peritoneum into a fold from one to two inches high. It acts as the ligamentum suspensorium hepatis and it is surrounded by a part of the anterior mesogaster. Should the ligamentum suspensorium hepatis become thin in any portion of its mesentery, a perforation might arise in it which might allow a loop of intestine to pass through it as frequently happens in the mesentery of a horse.

Again, raised folds of peritoneum due to blood vessels are not the only phenomena in the peritoneum attributable to blood vessels. We have large, thin and almost transparent areas in mesenteries which are due to lack of blood vessels. The areas occur among the arches of the vessels and especially at the lower end of the ilium in the region of the ileo-coloic artery. The areas in the mesentery toward the center are very thin, transparent and devoid of any visible blood vessels. Such atrophic regions I have observed in man and dog, also horses who have a thin mesentery show very thin areas. I should suppose that the perforated condition of the great omentum is similarly due to the atrophy of the peritoneal tissue lying distant from blood vessels.

The nerves of the mesentery are derived from the abdominal brain or solar plexus. They run along the blood vessels ensheathing them. The bundles of nerves and great vessels continue parallel until the anastomotic vascular arches occur, toward the distal extremity of the mesentery, where the nerves begin to leave the blood vessels and cross the areas of the vascular arches. From the beginning of the vascular arcades the nerves do not lie parallel to the vessels, but assume an independent course to the bowel. The formation of a series of arcades leads to the separation and breaking up of the nerve bundles, after which many of the nerves reach the digestive tube by the shortest route.

Dr. Waite and myself, during two years, investigated some thirty bodies in regard to the viscera. In a spare body we could strip off a fine, transparent, epithelial membrane from each side of the small bowel mesentery. This epithelial membrane on each side was so thin that one could not perceive it between the finger and thumb. It is the real peritoneum. After these superficial layers are stripped off from each side of the mesentery, a dense fibrous layer remains—the membrana mesenterii propria. The strong, white, tendon-like fibers in this mesentery proper are chiefly arranged in more or less thick bundles which gradually thin as they recede further from the arteries. The membrane is thick and heavy at the roots of the arteries, binding in a solid mass the nerves and vessels.

The membrana mesenterii propria is rigid and stiff at its base, preventing rotation or kinking of itself or of its vessels and nerves. As the membrane reaches toward the bowel it thins, loses many bundles of strong fibers and becomes more and more transparent. As it passes between the loops and arches of the arteries, by holding it up between the eye and the light, we can see the varying directions of the fibers. These tendon-like fibers are not precisely regular in distribution, and yet they have some regularity, like the direction of the fibers in a uterine myoma.

There are several layers of fibers running in gentle curves, always, thinning and disappearing as they become more distinct from the arterial loops. In the typical cadaver, by which I now sit and write, Dr. Waite and myself stripped off about a square foot of the superficial real peritoneal membrane on each side of the mesentery and by holding the long mesentery between the eye and a strong light, we could observe the various arrangements almost perfectly. It appears that as these fibers of the membrane proper, fill the space between the arterial arches and loops, they sweep in curves from one vessel to another. But the curving and interlacing fibers of the mesenterii membrana propria are firmly knit and bound into a tough layer, which holds with a firm grip the nerves and vessels in definite relation. Just as soon as the membrane reaches the bowel where it divides to receive the bowel, the connective tissue suddenly increases. In this body which lies before me, we could separate the superficial, peritoneal, epithelial covering from each side of the transverse meso-colon, but the membrana mesenterii propria in the transverse meso-colon is exceedingly thin and as transparent as glass, except where a large vessel was firmly embedded in it. The membrana mesenterii propria is very thin in the meso-colon transversum just as it is in the great omentum, or gastro-colic omentum. As the peritoneum passed upward from the upper layer of the transverse meso-colon, it passes over the pancreas, but a strong layer of the membrana mesenterii propria extends around the pancreas firmly imbedding it, for the pancreas is intimately attached to the peritoneum which lies in front of it, as it was once in the gastro-colic mesentery, as one can typically see it in the dog. Hence, we can say with much appropriateness in the actual examination of cadavers, fitted for the inspection, that the membrana mesenterii propria is the real mesentery. That it is simply covered on both sides by a thin layer of epithelial cells which constitutes the serous membrane. That this serous layer can be definitely stripped off. That the membrana mesenterii propria is the real neuro-vascular pedicle of the viscus at the distal end of the mesentery. That it firmly embeds vessels and nerves in its bundles of fibrous tissue which generally run in parallel lines or layers along the arteries.

One can prove that the chief bundles of fibers belong to the artery by dissecting out the artery when the mass of fibers will nearly all accompany the vessel. The great bundles of fibrous tissue are held together by a fine white tissue (connective), the same kind that surrounds each vessel and makes its snowy bed. No doubt this beautiful and useful arterial bed of areolar tissue, containing elastic fibers, saves many an artery from becoming an aneurysm, by equalizing its pressure and acting as a buffer against traumatism. It would appear that as we depart from the original primitive mesentery that the membrana mesenterii propria lessens continually, as for example, in the mesentery of the small bowel it is typical in size, strength and thickness; it is small and thin in the meso-colon transversum and finally in some parts of the great omentum it is scarcely visible.

In looking over the chief anatomies for one hundred years, it is evident that the mesentery has been viewed as a double layered membrane springing up from the dorso-abdominal wall. This membrane was indicating as inclosing the viscus and the vessels and nerves which keep it in existence. The same view I find in modern anatomies. The view is not so expressly stated, as implied, that the mesentery is simply a double layered membrane. It surprises me very much that I can find but little reference to the fact that the mesentery is a distinctly three-layered membrane, consisting of two thin epithelial membranes and one fibrous connective tissue layer—the three together constituting the mesentery, or the neuro-vascular visceral pedicle. That the mesentery has been viewed as a double layered membrane may be seen by examining the anatomies through Meckel, Hensing; Huschke (1797–1858, German anatomist and embryologist); Luschka, Henle and modern English workers. A work not at my command, but referred to by Professor Toldt of Vienna, shows that Thomas Wharton in his "Adenographic," published in 1656 (London) was the discoverer of the idea that the mesentery consists of three layers instead of two. Wharton writes that he, in the presence of Glisson, demonstrates the three layers of the mesentery on a 14-year-old girl, whose body was very spare. Wharton's discovery was confirmed by the anatomist, Verheyen in 1718. Toldt mentions that Bartholinus in 1686, and McEuler in 1746 are credited with investigating the three layers of the mesentery, in Haller's "Bibliotheca Anatomica" (1774). But the knowledge of these few anatomists seems to have been forgotten. In later times Ranvier, of Paris (1875) with his exact methods and brilliant results took up the subject and announced that the mesentery consisted of three layers instead of two.

In very early embryonic life the mesentery—a heap of cells along the intestinal canal—shows no indication of a double-bladed structure. But it appears as a simple bed in which run the vessels and nerves. It is faced with epithelial cells. In this aggregation of mesodermic cells gradually increases connective tissue and in the last month of intra-uterine life fat collects in the meshes.

The erroneous teachings of the old anatomists one would think would be buried with them, but one can easily see these errors propagated in modern journals. I refer to what the Latin anatomical writers curtly said in the short sentence: "*Organa intra et extra peritoneum sita.*" The development of the mesentery will dictate that all organs lie outside of the peritoneum. No viscus lies in the peritoneal cavity. Some surgeons gravely pretend to attack the appendix posteriorly to the peritoneum. Others with equal profoundness state that the appendix is an intra-peritoneal organ. These statements and many others in regard to intra-peritoneal organs are incorrect, for all organs lie entirely outside of the peritoneum. The organs can be enveloped by peritoneum, but are never entirely inclosed by it.

The mesenteries consist of two surfaces faced by smooth, shining, pavement epithelial cells. Between the layers of peritoneum composing the mesentery is a goodly amount of connective, elastic and often muscular tissue, which serves as a bed for the veins, arteries, lymphatics and nerves. A mesentery is of varying thickness, owing to the amount of fat and other tissue lying between the epithelial surfaces. In embryos it is very thin and as transparent as glass. In horses it is sometimes over two feet long and very transparent. Its use is to anchor organs to distinct points, to limit viscera to physiologic purposes by holding them in definite relations and allowing no entanglements or undue pressure. The mesentery is a highway for vessels and nerves and possibly the peritoneal covering aids digestion, sustains relations for ovulation and preserves conditions for expansion and contraction. The deviations of the mesentery from embryonic to adult life are the most manifest in the anterior and posterior mesogaster. Such changes affect higher mammals the most notably. As the stomach alters its primitive condition, the mesogastrium posticum or great omentum stretches out into a great sac, lying behind, to the left and below the stomach. This sac (bursa omentalis) generally hangs down below the stomach and covers the small intestines in most mammals. It has a varying relation to the colon transversum in the ascending grade of mammal life. The great omentum begins in most higher animals to embrace the transverse colon from the right toward the left as may be typically observed in the dog. The mesentery of the digestive tube lying posterior to the stomach retains a simple primitive character, especially when it is short. The mesentery of the carnivora with their short digestive tube is far more simple than of the ruminant with his long convoluted canal. The complicated mesentery chiefly arises in mammals who, from the nature of their food, require a long colon. It is the growth of the colon and its mesentery which destroys simple mesenteric relations. If the hind gut or colon grows it must grow forward from the neck of the navel loop and this quickly brings the colon with its mesentery in interfering relations with the lower and posterior end of the great omentum.

The mesentery either arises from the heaps of cells which grow around and inclose the gut, subsequently elongating into a double loop of membrane, or the mesentery arises by coalescence of intercellular lymphatic spaces from fluid pressure aided by independent action of adjacent walls—in short, cleavage, evagination, displacement, folding and coalescence of the mesodermic layer.

The mesentery of the small intestines (mesenterium) is a very variable element, as well as an important one. It is directed from the lower end of the duodenum across the trunks of the great blood vessels and the vertebral column obliquely, from left above to right below. The bony landmark is the second verte-

bral lumbar and the sacro-iliac joint. The soft landmarks are the lower end of the duodenum and the cecum. The mesentery consists of a right upper blade (lamina dextra mesenterium) and a left lower blade (lamina mesenterium sinistra). These two blades are in direct contact containing the nerves, vessels and lymphatics and connective tissue. The obliquity of the root (radix mesenterii) directs fluids on the right into the right iliac fossa and on the left in the pelvis. The mesenteric root in early life is situated high, but gradually descends with the progress of age, and after 35 may show distinct prolapse. The middle of the root of the mesentery and its lower end descends the most. However, much of what is known as visceral prolapse is mesenteric elongation. In fat persons the adipose deposit may reach one inch in thickness. At both of the mesenteric borders the blades diverge. At the root the right blade diverges upward over the transverse colon and laterally over the ascending colon. The left blade ascends over the transverse colon and laterally it passes over the descending colon. The left (under) blade alone descends into the pelvis. At the intestinal border both the plates of the mesentery diverge to inclose the small intestines. There is no fat between the peritoneum and the gut wall.

The mesentery in its strictest sense means that fold of peritoneum which holds the small bowel to the posterior wall of the abdomen. If we take the soft parts of the viscera as the landmarks of measurements, we will see that the mesentery begins at the lower end of the duodenum and ends at the lower end of the ileum. Should we take bony landmarks as a standard, the mesentery begins at the second lumbar vertebra and ends at the sacro-iliac joint.

The root or line of insertion of the mesentery is about six inches long and extends from the second lumbar vertebra on the left side obliquely across the spinal column over the great blood vessels to the sacro-iliac joint. The line of insertion is higher in fetuses than in adults. The average distance from the root of the mesentery to its embracement of the bowel is six and one-half inches. This measurement I have gained as the average from many cadavers.

At the upper and lower ends the mesentery has no length. Treves gives eight or nine inches as the length of the mesentery. Gray gives four inches. The second seven feet of the small intestine has the longest mesentery. Hence such coils may appear in hernia. The peritoneum constituting the right blade of the mesentery is continuous with the peritoneum which invests the under surface of the transverse colon and ascending colon. The left or under layer of the mesentery passes to cover the descending colon.

I carefully posted thirty-five adults and found in every case but one, that loops of small bowel could be dragged through a hernial orifice artificially prepared for that purpose. The mesentery is relatively longer in infancy than in adult life. In many adults during autopsy, I found that the mesentery had glided downward and prolapsed, and it seems that prolapse of the viscera increases with senility. The viscera do not generally begin to prolapse much before 40 years of age. Such prolapse tend to increase a subject's chances for hernia. My measurements give an average length of the mesenteric root or insertion in the abdominal wall as six inches. The average length of the small intestine, after many measurements, was about twenty-two feet. The shape of the mesentery is that of a truncated cone, measuring six inches at the top and twenty-two feet at the base. It is fan-shaped. In the adult the base of the cone rests at the left side of the abdomen, while the truncated apex rests in the center along the vertebral column. Very frequently the transverse portion of the duodenum passes along the line of the mesenteric insertion for one-quarter, one-third or one-half of the distance. By lifting up the small intestines with its mesentery, one is often able to see the lower edge of the transverse duodenum. The line of mesenteric insertion is liable to considerable variation. In general, the line starts high on the vertebral column in embryonic and infant life, but after 30 years of age the mesenteric insertion gradually shifts downward until senility frequently shows a distinct prolapse. The breadth of the mesentery from the vertebra to the bowel is very variable. The most variable portion is at the lower end, yet likely much of the variation is due to prolapse or elongation. I have operated for femoral hernia when the lower three inches of the ileum was the strangulated loop. Generally the second seven feet of the small intestines have the longest mesentery. However, the variation from this measurement generally consists in the bowel still further down having a longer mesentery. The changes at the lower end of the mesentery concern the variation of the descent of the cecum. Suffice it to say here that if the cecum is non-descended, the deficit is made up by the ileum running over or up the psoas muscle to meet the partially descended cecum. If, on the other hand, the excessively descended cecum lies in the pelvis, it is liable to produce a more or less elongated mesentery at the lower end of the ileum. The upper end of the mesentery is complicated by the fossa et plica duodeno-jejunalis. A few days ago I posted a man of 60, where the fossa duodeno-jejunalis looked downward and to the right and would admit the tips of three fingers. The fossa was over two inches deep and would receive a large loop of bowel. Its free horn was over three inches long and contained the inferior mesenteric vein in its free border in a most typical form. The free border of the plica duodeno-jejunalis also contained the inferior mesenteric artery for about half its length. The extremely large fossa et plica duodeno-jejunalis was very obvious in this subject, owing to the vasa mesenterica inferior, but especially the inferior mesenteric vein. Hence the variation of the lower end of the mesentery is chiefly due to the non-descent or excessive descent of the cecum. The variation of the upper end of the mesentery is chiefly due to the variation of the fossa et plica duodeno-jejunalis. The variation of the whole mesentery is mainly due to fat, prolapse or elongation—senility.

It may be stated that the mesenteric attachment is acquired or secondary. We may recall the examinations of fetuses when the whole mesentery of the digestive tube was inserted in the mid-dorsal line, from diaphragm to caloaca, *i.e.*, the whole bowel, large and small, had one common mesentery. This mesenterium commune was a straight unbroken fold hanging from the backbone, but growth of viscera and bowel and increase of abdominal space changes of mesenteric insertion are wrought until very little primitive mesenterial insertion remains. Even the meso-sigmoidea, which is named as primitive mesentery, is pushed from its original mid-dorsal insertion

toward the left iliac fossa. However, in infants as old as eight months, I have found the meso-sigmoidea distinctly inserted into the middle line as high as the under pole of the kidney which appropriates the original mesentery of the meso-colons descendens. In an adult the only real primitive mesenterial insertion belongs to the rectum. For, though the meso-sigmoidea and lesser omentum are still primitive, their original position has changed from the original fetal. Hence by changes in visceral growths, by rotation of the great intestinal loop, by displacement of the mesentery and perhaps by coalescence of peritoneal surfaces, we observe the wonderful changes in the original mesenteric insertions. We note that nearly all of man's mesenteric insertions are acquired or are secondary. The adult mesentery of the small bowel chiefly represents the changed mesenterial insertion of the distance between the neck of the great loop at its base *i. e.*, the loop supplied by the superior mesenteric artery. The acquired mesenteric insertion of the jejune-ileum is closely associated with the transverse and last ascending portion of the ring-formed duodenum, for the superior mesenteric artery and vein in the adult passes in front of the transverse part of the duodenum (an acquired condition). In many cadavers I have found that the last portion of the duodenum seemed to lie at the base of the small bowel mesentery, in fact between the diverging mesenteric layers as they were inserted on the vertebral column where the layers of the mesentery received the superior mesenteric artery. I have found no reference to a discussion of this point in regard to the relation of the last point of the duodenum to the base of the small bowel mesenteric insertion. The most certain fixed ending of the superior end of the mesenteric insertion is near the pancreas, on the second lumbar vertebra or at the lower end of the duodenum. The most uncertain ending is the lower end of the mesenteric insertion which ends in a very uncertain manner in the left iliac region due to the various degrees of descent of the cecum. I have noted the ending of the lower end of the mesentery the whole distance from immediately under the liver to the pelvic floor.

(To be continued.)

NEW INSTRUMENTS.

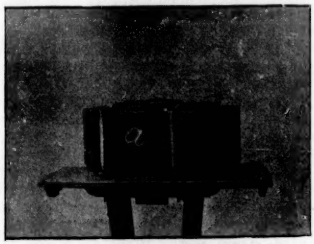
BAXTER'S PORTABLE STEAM STERILIZER FOR INSTRUMENTS AND DRESSINGS.

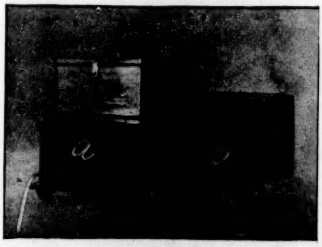
BY G. A. BAXTER, A.M., M.D.
PROFESSOR OF SURGERY, CHATTANOOGA MEDICAL COLLEGE.
CHATTANOOGA, TENN.

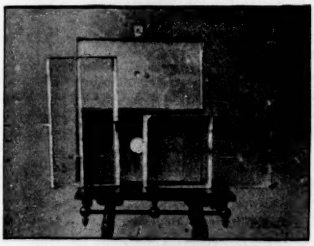
PLATE 1.—*A*, The complete package closed, showing outside telescopic case 15⅓ inches long, 8½ inches broad, and, when closed, 6 inches high. The case here shown is made of wood-pulp but may be made of canvas or leather. The telescopic character of the case allows other articles to be carried in it if desired, such as a Kelly rubber pad or an operating gown.

PLATE 2.—Steam chest for instruments and dressings with water-box attached by the handles of the latter to steam chest, ready for outside case.

PLATE 3.—Steam chest open and on its side, looking into its interior; large hole in bottom for entrance of steam, into which elevated flange on top of water-box fits; small hole in top of steam chest for escape of steam. The large hole below and the small one above gives a lateral distribution of the steam and considerable pressure. Both holes are fitted with screw caps for their perfect closure in transportation after sterilization is complete. Trays are provided for instruments and dressings, which fit in steam chest. The lower has rounded corners for the upper to rest upon and is three and one-half inches deep for dressings; the upper one is one and one-half inches deep, for instruments. Both have perforated or wire bottoms for the passage of steam, and movable partitions fitting in slots, for the separation of dressings and to make more steady the instruments in transportation.







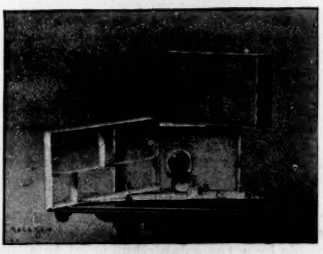
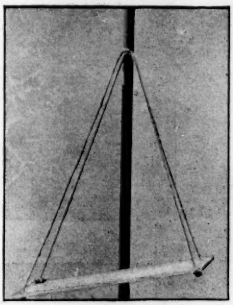


PLATE 4.—Shows bottom view of steam chest with flange

(one inch) to admit of application of elevated screw cap opening with screw cap for closure. On bottom of trays is shown small flange, one-third of an inch, to keep the bottoms of the trays from contact with surfaces upon which they may be placed, which fits them for operating trays also. There is a water-box one-half of an inch deep, holding about a quart of water for generating steam; with an opening in the center having an elevated flange like the top of a dinner bucket which fits into an opening in steam chest when in use, and a small opening with screw cap for the complete evacuation of the water-box.

In order to use this sterilizer, place dressings in the deep tray and instruments, sutures, ligatures, needles, etc., in the shallow tray and both in the steam chest. Fill the water-box; place steam-chest over water-box, which brings the elevated flange opening on the top of the water-box within the large opening in the bottom of the steam-chest, and fasten them together. with the handles of water-box which catch on pin on end of steam box. Place both over any convenient fire, it matters not what kind, and steam



will generate soon (within five minutes or less by actual experiment over a good fire). This would give an outside time of thirty minutes as sufficient for sterilization of instruments and dressings, about the least time which would be required to prepare the patient and both could progress together in emergency cases as no special heating apparatus is required. If, however, in a previously planned operation it is advisable to make the sterilization at the office, the package can still be lessened by closing the openings in the steam-chest with their respective screw caps leaving the water-box at home. The weight of the whole package in either galvanized iron or aluminium is light and the closed package not bulky in the least. The dressings are not made soaking wet, but about the moisture of Linton moist gauze.

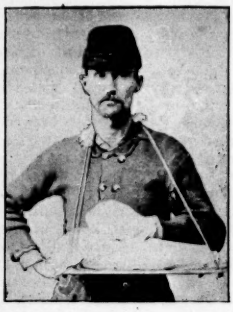
COST.

These sterilizers are made from either galvanized iron or from aluminium. For family use they can be made of tin and fitted with tray for bottles instead of instruments. When made from galvanized iron, the wire bottoms of the trays should be galvanized also, but the bottom and side of the water-box should be of copper. Such is the one I have in use, made by a tin establishment of this place and costing $5 including the outside case. They can be made in aluminium at a cost of $15.

NOTE.—This cost in aluminium is an actual bid from a reliable firm for the manufacture of the first one in this metal. I can affirm positively that they can be sold with a fair profit at or very near this price, and as my only desire is the aid to my professional brothers I will agree to communicate this offer to any respectable instrument-maker who will agree to keep the price of the instrument down to a reasonable profit upon them.

BAXTER'S SWING SUPPORT FOR BADLY INJURED HAND OR ARM.

The above swing support I have found a very great convenience in a large class of injuries occurring in my work among railway employees. It gives no pressure upon the hand in any way, and holds it as steadily as if it were at the side in bed. I have shown this to a number of physicians, some of whom have remarked: "I have seen that before;" but upon reflection have declared themselves mistaken and said that they supposed it was its simplicity which gave them their first impression. If it is not a new device, I have been unable to find a report of its use anywhere



in the surgical references at my command, and it should be more widely known for its convenience, as it will keep many a case on foot which would otherwise be confined to bed.

SOCIETY PROCEEDINGS.

American Electro-Therapeutic Association.

Fourth Annual Meeting held in New York Academy of Medicine, New York, Sept. 25, 26, and 27, 1894.

WILLIAM J. HERDMAN, M.D., President.

(*Continued from page 558.*)

GEORGE GAUTIER, M.D., of Paris, France, presented a paper on

METALLIC OR INTERSTITIAL ELECTROLYSIS.

Interstitial or metallic electrolysis is a use of the galvanic current that has many applications in electro-therapeutics. Personally, I have been experimenting for three years with this therapeutic application of the current, with a view to define more clearly its method of application and demonstrate its use to physicians.

Interstitial electrolysis takes place each time that we connect the positive pole of a pile or of a Gramme's, Siemen's or other machine with an oxidizable electrode of copper, zinc, iron, manganese, aluminium, etc., or when we decompose a solution of potassium iodid by the anode.

The electrolytic products, which are different at each pole, can be made use of in two different ways; either they can be absorbed in great part with the help of oxidizable electrodes, or they can be diffused through the tissues with the help of unoxidizable electrodes. We have at the positive pole different effects produced on the tissues, according to the nature of the electrode and the decompositions that

take place there. Thus with coal we produce a lesion deeper than with platinum and gold, which afterward suppurates and takes on all the characters of the cauterizations made by acids, fire or the thermo-cautery.

It is on this particular action that Dr. Tripier founded an important branch of electro-therapeutics; I speak of electrolysis or cauterization and destruction of living tissues by the continued current. With oxidizable electrodes we have no destruction of tissues. We have here instead a decomposition, giving rise to new compounds which are diffused into the tissues according to the direction and intensity of the current. With iron we obtain an oxid, with zinc and copper a chlorid and an oxychlorid If we kill the animals that have served for experiments in metallic electrolysis with copper, we find oxychlorid of copper in places distant from the point of application, and the coloration shows that the diffusion is greater according the length of application and the intensity of the current. I have some time since made a study of these different operative factors, *i. e.*, the current's intensity and duration, and have noted especially that operations of this kind produce neither destruction of tissue nor suppuration. Since then, several years have passed, and I now wish to present to you a method of treatment whose value increases according as it is well known and above all well applied. . . . . .

I prefer copper for the oxidizable electrode and rarely use the zinc electrode, which has no advantage and possesses certain disadvantages, especially that of causing pain. Iron is indicated in the treatment of fibromata without any inflammatory lesions of the adnexa or of the uterine mucosa. In this case one avoids partially the cauterization that takes place in galvano-chemic cauterization or when the operator uses platinum or charcoal for the electrode.

The electrodes of pure copper are, according to my experiments, the ones that give the most rapid results in a great number of cases. I can not in this summary note describe all the applications of cupric electrolysis which I have made. The physicians who devote themselves to electro-therapeutics know that I have endeavored to generalize the use of this method and that to make more varied its uses there would only be necessary a few changes in the *modus operandi*, such as was described by me two and a half years ago. The following objections have been raised to this method of treatment:

1. Cupric electrolysis is said to be very painful. Indeed, it causes uterine pains which last sometimes three days; these pains are caused by the formation of gases or by a certain degree of inflammation of the mucosa. Thus in chronic inflammatory diseases of the uterine mucosa, the patient feels after the sitting general pelvic and lumbar pain, which diminishes the first day after the operation and disappears on the second day; there is then a discharge of mucus and little clots of blood, and on the fourth day there is relief from all the pains of disease felt before the operation. These post-operative pains can generally be relieved by an injection containing laudanum.

2. Cupric electrolysis is said to predispose to hemorrhage. I maintain, on the contrary, that the method is the best treatment against hemorrhage. After the sitting we have often a slight flow of blood, even for two or four days, but afterward the effects of the treatment appear, the congestion is diminished and the vascular tissues are contracted. Thus in chronic metritis, characterized by hyperplasia of the uterine connective tissue with an increase of sensibility, we can verify, after one sitting of cupric electrolysis, the most marked improvement. The menstrual flow is subsequently diminished, the sensibility disappears and the patient is greatly relieved. These post-operative reactions are easy to study in external applications. In sycosis, for instance, the lips are swollen the first day; on the second large greenish serous patches are seen at the seat of puncture; after that the skin becomes normal in color and very supple. But the treatment of external hemorrhoids shows most clearly the effects of the oxychlorid of copper. When we puncture a large hemorrhoid, the same evening the veins are dilated and swollen, the third day they are scarcely visible. In this case also there is a slight flow of blood, but this is of slight importance, as the hemorrhoid so treated remains permanently cured.

Others will explain better than I, the therapeutic action of the oxychlorid of copper. It destroys inflammatory tissues, reduces quickly and effectually local congestions and finally possesses a real antiseptic power.

DISCUSSION.

DR. A. H. GOELET said that another year's experience with metallic electrolysis in uterine disease served to convince him more firmly of its value in this particular class of cases. His views had, however, changed somewhat in the past year, in that he very much preferred zinc to copper. He believed that Gautier had pointed out some time ago that the insoluble salt of copper, referred to by Dr. Morton, was deposited beneath the surface, and this would explain why the benefit was not always apparent at once. Last November he had been asked by Dr. Bryant and Dr. Lusk to see a case of persistent and obstinate hemorrhage complicating a fibroid tumor of the uterus which illustrated the delayed action of this method of treating uterine hemorrhage. Dr. Lusk had already curretted but without arresting the hemorrhage. The speaker said he made four applications of cupric electrolysis in this case and observed only slight improvement at first, but advised a little delay. One month later Dr. Bryant told him that the hemorrhage had gradually ceased. Six months later he reported that the patient was apparently perfectly well and there had been no recurrence of the bleeding. The fibroid still remained.

Dr. Morton had said that we may use any metal, but he, Dr. Goelet, thought the salts of iron were too irritating. The same might be said of cupric electrolysis as the primary effect of the copper salts were highly irritating, and in the vagina even produced excoriations. The result of zinc electrolysis was the formation of an oxychlorid of zinc which was not only antiseptic but caustic, an action often desirable. The fact that the zinc electrolysis does not cause the electrode to adhere to the surface to which it is applied as does the copper is a great advantage in its favor. Where astringency was needed, he had used silver, because the silver salt was astringent without being very irritating, and without causing the disagreeable adhesion to the tissues. He considered cupric electrolysis particularly advisable in cases of septic endometritis where for any reason it was considered unadvisable to curette. He had had a number of cases in his clinic where septic endometritis had been overcome by a half a dozen applications or less. He recalled particularly a case of distinctly gonorrheal origin which was completely cured by six applications of this kind. The case had been kept under observation for many months so as to be sure of the permanency of the result. In these cases, as well as in uterine hemorrhage, he now preferred zinc, as the result was more promptly reached and there was none of the disagreeable irritation which followed cupric electrolysis. Another application of cupric electrolysis which has not been mentioned, was in the treatment of vulvo-vaginal cysts after evacuation of the contents of the cyst. These cysts were obstinate in healing under the usual treatment, but under cupric electrolysis with a current of from 20 to 25 milliampères applied for five minutes, one or two applications usually sufficed to effect a cure. In making use of these metallic electrodes in the uterus, it was necessary that the electrode should be in close contact with the tissues. Realizing that Gautier's electrodes were inconvenient, he had had some electrodes made which he exhibited. The hard rubber handles were so shaped as to indicate the direction of the point of the instrument. The vaginal part of the instruments were insulated with soft rubber tubing, which by moving on the shaft allowed a larger or smaller surface to be exposed for action.

DR. MARGARET A. CLEAVES said that she had had the same experience as had Dr. Goelet, regarding hemorrhage persisting for a while after the treatment and then stopping later on. If the applications were made about the time of the menstrual period there was apt to be an exaggeration of the menstrual flow, but subsequent periods were more nearly normal. In endometritis associated with dysmenorrhea, she had in three or four treatments given complete relief. She was also more inclined to use the zinc than formerly, particularly in cases of erosion. She had treated trachoma in the third stage by means of zinc electrolysis, and the improvement had been very marked and permanent, although only a few applications had been given. Gautier said that iron was indicated in fibromata, providing there was no inflammatory condition in the neighborhood. She had used aluminium for a few months past in endometritis, but was not prepared to speak as to its value. She continued to use cupric electrolysis in atrophic rhinitis with success, also in follicular pharyngitis. In several cases of acute follicular tonsillitis a single application of cupric electrolysis, 3 to 10 milliamperes, had resulted in complete resolution. In an epithelioma with extensive ulceration, she had had relief from symptoms, and tendency of ulcerated surface to heal from margins and bottom, from two applications of cupric electrolysis, but had not been able to follow the case

up and could not give ultimate results. In a case of beginning suppuration in a nurse's finger, from infection, a cupric puncture with 2 to 3 milliampères of current established resolution. In specific urethritis in the female, she continued to find it prompt and efficient in action.

DR. WALKER said he had had a case in which he thought this treatment would show the advantages of metallic electrolysis. A lady, ten years married, suffered from excessive menorrhagia every two weeks. All medicinal means had been used before he saw her. Copper electrolysis was tried between the periods and was followed by extreme menorrhagia. As the next period was no better than the previous one, another application was applied given in the interval. This was followed by much the same result. With much difficulty she was persuaded to submit to still another application. The result was the same, and the electrical treatment was discontinued. After this menstrual period, as she was going to New York City, she was advised to call upon Dr. Goelet, but a few days ago she had come into his office and reported that she was well. She said that she had not been to Dr. Goelet's because her next period had lasted only seven days, and the next only five, so that she did not deem it necessary to seek further advice.

DR. O. S. PHELPS, of New York, said he wished to report a case in which this treatment had been tried. It was one of mucous cysts of the tongue occurring in a patient 25 years of age. The tumor was about the size of a hen's egg. It had been operated upon once in Germany and several times in this country, so far as could be ascertained, by evacuating the cyst and by injecting iodin and similar remedies. The speaker evacuated the cyst and made two applications of cupric electrolysis about five days apart. The result was a perfect and permanent cure. The Doctor also exhibited a set of elliptoid electrodes which he considered quite a triumph for the instrument-maker. They were made by depositing copper on hard rubber with the idea of avoiding the great weight of an electrode made entirely of metal. The particular form of the electrode had been selected because with the egg-shaped electrode he had found that it was often difficult to withdraw it in cases of urethritis.

DR. DICKSON asked Dr. Goelet as to the present status of cupric electrolysis in the treatment of uterine fibroids.

DR. GOELET said that his personal experience had been that cupric electrolysis was only useful in the way of controlling hemorrhage and that no greater reduction of the size of the growth had occurred than with ordinary electrolysis. He had found that zinc would control the hemorrhage just as well as copper, and the beneficial effect was more quickly obtained. Others had had a similar experience. Zinc also affected, more materially, the size of the growth.

DR. J. J. PUTNAM asked what was the effect upon cell growth of this deposit of metal by the current in the deeper tissues. Was there any effect from the treatment other than that on the circulation and nutrition?

DR. BEAVER said he would like to hear further from Dr. Morton regarding the results he had obtained in the treatment of trachoma by metallic electrolysis. So far as they had reported them they appeared to be exceptionally good, as he understood the average duration of treatment had been only about one month.

DR. MORTON replied that the details of most of the cases would be published.

PROFESSOR DOLBEAR said that Dr. Morton had spoken of the value of copper, and Dr. Goelet of the value of zinc in metallic electrolysis; he would suggest that brass, which was an alloy of these two metals, might be as good as either of the metals separately.

DR. MORTON said he had tried brass electrodes, and had found that they gave a prompt deposit of copper. He remembered that Gautier had made allusion to the possible presence of an insoluble salt in the tissues, but he did not recall any absolute demonstration of its existence. In all his experiments in the laboratory with iron, he could not induce the deposit of iron to spread far from the electrode, which was in marked contrast to the behavior of copper. He thought the zinc diffused as well, or possibly even a little better than the copper. A patient had come to his clinic with a tumor of the parotid gland, and it had occurred to him to test metallic electrolysis upon it. A copper needle was plunged into the tumor and the metal freely dissolved off the needle by the current. Before doing this a piece of the tumor had been removed by the trocar. The microscopic examination of this showed it to be a round-celled sarcoma. The metallic electrolysis had not the slightest effect on this sarcomatous growth. In answer to a question by Dr. Putnam as to the action of this form of electrolysis on cell growth in general, he could only say that he knew of no exact observations on this point. There were certainly no effects on the cell growth in the case of sarcoma just alluded to. He thought there would be an effect on the nutritional processes by the presence in the tissues of a soluble and an insoluble salt of the metal of which the electrode was composed.

THE PRESIDENT said that his experience with metallic electrolysis had been chiefly in treating inflammations of the surface membrane—in endometritis and in gonorrhea—and he thought that in these cases there was a wide field for its action. In almost all the applications of local remedies hitherto made, the albumin of the tissues has been coagulated by these applications, and the bacteria in this way shut off, as it were, from the effect of further applications. On the contrary, by metallic electrolysis one was able to ferret them out and destroy them. He had never found anything so satisfactory for the treatment of gonorrhea, and his assistant had reported that she had obtained remarkably good results with it in endometritis.

SELECTIONS.

Contributions to the Theory of Respiration.—(R. Arnheim, Du Bois-Reymond's Arch. 1894, and Inaugural Dissertation, Berlin, 1894). A digest of this work is stated by the writer as follows: I, the acceptance of a single co-ordinating center is necessary for a satisfactory interpretation of the normal mechanism of respiration; II, the stimulation of Gad's respiratory center in the medulla oblongata alone results in strong activity of the whole process of respiration: III, the changes of respiratory activity which hitherto have been attained, experimentally, from all portions of the central nervous system above the medulla oblongata, do not depend on stimulation of specific centers, but are to be regarded as effects of irritation of the tracts leading to the respiratory center.—*Centralblatt für Physiologie.*

Contribution to the Study of Gastric Digestion, Under Unusual and Abnormal Conditions.—(Penzoldt, *Deutsche Archiv. fur Klin. Medicin*, Bd. LIII, Hft 3u 4.) The investigations comprise the behavior of hydrochloric and lactic acids, albumin, peptone and sugar. The time of appearance of free hydrochloric acid in health depends, aside from slight variation in the individual, upon the quality and quantity of the food. Very generally food which remains long in the stomach draws out the muriatic acid later than that of short duration. The former commonly contain much albumin, a circumstance which as unprejudiced experiments showed, is responsible for the delay of muriatic acid. The positive reaction of muriatic acid continues longer in the case of food containing little albumin than in that rich in albumin.

The writer ascribes no practically useful importance to the Uffelmann lactic acid reaction. It appears in health after ingestion of the greatest variety of food and drink, either from the beginning to the very end, as it is so variable in its appearance, that it furnishes no positive diagnostic points. Albuminous substances in solution are found in the stomach only in small amount and are altogether absent in the last part of gastric digestion. Peptone reaction follows albumin reaction with only unimportant variations. One can therefore assume, that, as the coagulated albumin begins to dissolve under the influence of the digestive fluids, the formation of peptone also begins. Search for sugar after ingestion of carbohydrates always results negatively, unless the percentage of carbohydrates in the food is over 10, while after food containing large amounts of carbohydrates, sugar can be regularly demonstrated. Comparatively often the sugar reaction disappears early, even long before the stomach is empty. It appears therefore that the prevailing rule for other substances, as peptone, is applicable to sugar, that materials dissolved in water diffuse more quickly out of the stomach than in any medium acting as a solvent in the stomach.—*Centralblatt für innere Medicin.*

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SATURDAY, APRIL 27, 1895.

THE COMING MEETING.

Every reader will notice that the program of the papers to be read at the Baltimore meeting is of more than usual interest. The topics are less hackneyed, newer and more suggestive, and the readers include many of the leading medical men of the country. The central location of the meeting should attract a large number of persons who have not been regular attendants.

Notwithstanding the foolish criticism and even condemnation of many persons, the fact has become more prominent than ever, that this ASSOCIATION represents the progress of medical science in America more distinctly than any other organization. In its membership are the teachers and specialists and general practitioners from all over the country. The theorists and dogmatists who arrogate to themselves all there is of science, come in contact with the village and country physician and go away wiser. The teachers and specialists, from the circles of flattery and hero-worship, are astonished at the low estimate their theories sometimes receive. The papers read before admiring friends receive cold criticism from strangers, and scant comment. The surgeon and obstetrician are startled to find the same operations have been made, and sometimes improved on, by men from smaller circles of life. Thus the process of disillusionizing and breaking up the narrow conceptions of truth, and the personal equation of enthusiastic men, give the ASSOCIATION meetings a value that the real student fully appreciates. The credulity and jealousy of narrow circles of professional activity, disappear in the open frank opinions of men from widely separated sections who rise above personalities. This is the point toward which the scientific work of the ASSOCIATION is rapidly drifting. The reader of papers is judged from a different point of view than at home in his local or State society. His work comes to a relatively higher court, and must rise or fall on its merits alone. Many men overlook this fact, and lose their energies in the natural friction of the organization and management of the ASSOCIATION. They forget this is only a small part of the real work, and the precise rules and plans of working, while essential in many ways, are largely self-limited and self-perpetuated.

The real work—which will live, are the contributions to science, the discoveries of new laws and new phases of old truths. Papers embodying new facts go into the world's literature through these ASSOCIATION meetings more positively than by any other source. The physician who aspires to lead in the march of scientific discovery has an open field here with fewer rivals. He can plead the cause of truth at the bar of the world, and its judgment will be just and clear. Literally, the physician in every section of our country should consider it a rare privilege to become a member and attend the meetings. Every year the topics of medicine are widening and deepening in interest and no man can practice successfully and not keep in personal touch and contact with these great issues. The man who excuses himself from joining the ASSOCIATION because of its politics, its Code, or the possible "rings," is losing his sight and, like a belated traveler, is struggling in the darkness of his own conceit. The man who sneers at and condemns the scientific and literary work of the ASSOCIATION is like a camp follower far in the rear, shouting frantically to the warriors in the front line of their mistakes, and how to conduct the battle. Finally, the man who is ashamed to join the ASSOCIATION and take an active part in its yearly meetings, because it will bring him in contact with persons less trained and of lower caste, is hopelessly stricken with *marasmus*, and needs all the time possible to prepare for heaven.

What shall we say of the *Ego-Maniasts*, whose great erudition and high attainments are not quickly recognized by the ASSOCIATION, in the bestowal of honors and offices? Men who drop out of the ranks disaffected and chagrined, we leave to their fate. The coming meeting should bring to our members an inspiration and wider spirit of devotion and interest to medicine, and personal acquaintance, with the rest of new scenes and new surroundings that will be felt through all the year.

The city of Baltimore offers rare attractions, and the annual pilgrimage of the AMERICAN MEDICAL ASSOCIATION will find here a veritable *Mecca* that will help us all far on the road to the ideal society and ideal meeting.

DIFFERENTIATION OF SPECIES BY THE BACTERIOLOGISTS.

The Water Committee, of the American Public Health Association, which is organizing a co-operative investigation into the bacteriology of water supplies, is making haste in a slow sure way. We learn that every bacteriologist of note in the United States and Canada, and many of the earnest younger workers, have volunteered in the cause. As a result of a preliminary inquiry into the methods to be adopted, there has been developed the weak point of bacteriologic laboratory work. The subcommittee on the methods of laboratory procedure, after a full consideration of the schemes in use by the various volunteer laboratories, has concluded that it would be unwise to make any effort at the differentiation of species by our present inexact methods. Differentiation is now made with comparative certainty only after studying a dozen or more physiologic characteristics. It is true that under unvarying conditions constant results may be obtained and parallel results under parallel conditions; but it is well known that varieties may arise from divergent conditions in laboratory methods; and hence the necessity for the best scheme of laboratory work in such an investigation as that proposed by the committee. In the opinion of those who have given the matter most consideration, there appears to be little doubt that the present bacteriologic methods fail to inhibit the production of varieties during the course of laboratory study, and that until life histories can be controlled and reasonably normal environment be obtained, there is little hope of a satisfactory differentiation of species. In fact, with increasing knowledge of bacteria along the present lines of investigation, comes increasing difficulty in differentiating.

The committee, therefore, considers that the time has arrived when bacteriologists should come to a halt, and ask themselves what is the cause of this state of affairs and what can be done to remedy it? It proposes to meet these questions boldly. In a circular letter just issued to the bacteriologists interested, it indicates in a general way the errors in the present methods, and calls a meeting in New York city in June, to consider and establish the first principles of the subject and place them on a more substantial foundation. To facilitate discussion and to aid the bacteriologists of the several laboratories in gathering together the evidence which they have at hand, the committee submits twelve questions on which it is assured that the laboratories can bring forward much valuable and hitherto unpublished data. The settlement of these questions will enable the committee to elaborate its scheme of laboratory procedure and permit the co-operative work on the bacteriology of water to progress on lines leading directly to the advancement of bacteriologic knowledge, as well as to the practical sanitary results desired by the American Public Health Association.

The work of this Water Committee carried out in the careful and effective way indicated by the present action of the committee promises to be one of great value. It is a work, however, that should now have been in progress under the supervision of a United States Commission, such as was proposed by the bill introduced into Congress by MR. BARTHOLDT, for the investigation of the pollution of water supplies where such pollution affects or threatens to affect the sanitary condition of the people of more than one State, or better still, under the direction of a Department of Health such as has been urged by the members of the AMERICAN MEDICAL ASSOCIATION.

PERMANENT CURE OF RHEUMATISM THROUGH MISADVENTURE.

DR. ALAN T. SLOAN reported in the *Edinburgh Medical Journal* for February a very interesting case of successful cardiocentesis. In a hurried attempt to tap the pericardial sac, the right ventricle was entered. The patient, a young woman of 19, was at the time in a very low condition—"practically moribund," as some one has expressed it. The attack was one of acute rheumatism, subsequent to a sharp attack of facial erysipelas; there was the complication, well-nigh fatal, of pericarditis with effusion. In fact, the announcement had been borne to him that the woman had died. DR. SLOAN found her with a pulse too feeble to be counted and with the facial pallor of death. He gave her two subcutaneous injections of ether, whereupon pulse and respiration ceased. In the excitement of the moment the physician took up his aspirator and plunged the needle in the fourth interspace about half an inch to the left of the sternum. Much to his surprise there flowed rapidly into the bottle of the aspirator eight or more ounces of pure blood, showing that the right ventricle of the heart itself had been entered by the needle. The physician felt that all chance for recovery was gone forever. He adds:

"As I was slowly withdrawing the canula, regretfully telling the nurse that it was all over, and to close the patient's eyes, to my surprise the heart made first a feeble irregular movement, then gave a sudden strenuous jump, and finally, like a pendulum regaining its swing or a runner his stride, it started to beat again in the race for life. In moments of intensity it is difficult to estimate time, but I should say fully half a minute had elapsed between the introduction of the needle and the re-starting of the heart-beats. It was an extraordinary sensation to feel the heart beating more and more forcibly against the point of the canula, which was gradually withdrawn so as not to further injure the heart wall. I was standing thus, with my thumb on the puncture made by the needle, when DRS. BRAMWELL and SMITH made their welcome appearance. My uppermost feeling at first was one of regret that I had converted

a patient practically dead into one apparently dying, and sincerely did I lament that she had not been left to pass away in peace, for a most pitiful scene was now enacted for an hour. Occasionally there was given a heartrending shriek; quantities of frothy mucus were half-coughed, half-vomited, and had to be swept out of the mouth with a towel; the blood went ebbing and flowing from the cheeks, which were first ashy gray then purplish in hue; the pupils were dilated to their fullest extent; the running following pulse was quite unaccountable; and the patient had every appearance of one dying asphyxiated."

The cardiocentesis was supplemented by ether subcutaneously injected, the result of which was a maniacal excitement that required opiate treatment. Dr. Sloan continued free stimulation by the mouth with brandy and champagne. The patient's condition improved, so that forty-eight hours after the puncture there was a return to normal temperature and to a pulse of 40. Two months later she was sent away into the country, and four months still later she reported as being restored to perfect health.

There have been other cases of accidental puncture of the heart, when the intended operation was only a paracentesis of the pericardium. One by Roger, in 1872, the right ventricle of a child was entered, drawing off six ounces of blood; the child was suffering from pericardial effusion. The patient recovered from the effects of the operation, but died five months later from failure of compensation.

Dr. Sloan, in looking up the literature of the subject, found other cases where relief was obtained by cardiocentesis, but his own is the first he was able to refer to as a "permanent cure." He opines that, among other conditions, narcosis from chloroform will be found to be one that will sometimes respond to the aspiration of the heart.

THE MANAGEMENT OF PREGNANCY COMPLICATED WITH UTERINE FIBROIDS.

It is generally held by gynecologists that the presence of myomatous masses, either subperitoneal or invading the uterine cavity (especially the latter), favors sterility, and, in the opinion of Emmet and other competent observers, the converse of this proposition is also true, since uterine fibroids are most frequently encountered in unmarried women. In many instances this particular form of hyperplasia is associated with gross lesions of the tubes and ovaries, abnormal conditions of the endometrium, and functional irregularities, which in and of themselves are unfavorable to impregnation, and which are so intolerant of the presence of impregnated ovum that miscarriage frequently occurs. In other cases, the abnormality of these associated organs permits the escape of the ovum into the peritoneal cavity, and abdominal pregnancy is the consequence. Even when gestation proceeds regularly, the development of the uterus must be unsymmetrical, and much pain and discomfort is occasioned thereby. The growth of the tumor is also likely to be stimulated by the gravid state of the organ, and its rapid enlargement may give rise to pressure symptoms, or produce conditions which cause a more or less serious problem for the consideration of the accoucheur. Finally, the danger to the mother does not terminate with the safe delivery and birth of the infant, for the complication causes the puerperal period to be extended, part of the growth may slough during involution, or gangrenous endometritis may give rise to fatal septicemia. At the last meeting of the Philadelphia Obstetrical Society, Dr. Anna M. Fullerton reported a case of this kind. It was a primagravida at term, in which labor was complicated with a large fibroid, over the site of which the placenta had been attached. Two hours after a forceps delivery, sudden death occurred, which was attributed to the entrance of air into the uterine sinuses, rendered persistently patulous by the non-contractility of the fibroid tissue.

The uncertainty as to the prognosis concerning the puerperium of a woman suffering with uterine fibroids, was well illustrated by the reports in the same communication of several cases occurring at the Woman's Hospital. The first died as above stated. The second, by constant medical attention, was carried to full term. Labor was greatly protracted owing to the inefficiency of the uterine contractions, and was terminated by the forceps; the child, a large boy, was born asphyxiated and could not be resuscitated. The mother made a good recovery. The third case was especially interesting. It was a farmer's wife, 42 years of age, a primagravida. She had multiple fibroid growths, some in the lower uterine segment, and had been previously advised by two distinguished gynecologists to have a Porro operation performed at term in order to accomplish delivery. Premature rupture of the membranes occurred, however, at the end of the eighth month, and delivery was accomplished by high forceps; the child, a female weighing 2,710 grams, was extracted, and three weeks later mother and child left the hospital in good health. Thirteen months later the patient again presented herself, pregnant and near full term. The tumors had increased in size, so that version had to be performed; the after coming head was caught by a projection from one of the tumors and caused some delay. The child, a large boy, lived only twenty-four hours. Eighteen months later, the patient again applied at the hospital, as before, and was delivered at term, instrumentally, of a girl weighing 3,100 grams. Both mother and child did well. It is most interesting to note that since the last delivery the tumors have markedly decreased in size. A fourth case, primagravida, 29 years of age, aborted at the termination of the sixth month of utero-gestation. After expulsion of the product of conception, it was found that

a large submucous fibroid, about the size of the fetal head, completely filled the uterine cavity. The uterine wall in the part which had covered the ovum, was exceedingly thin. The patient did well until the thirteenth day, when sepsis developed. Hysterectomy was recommended; but consent was not obtained until six days later, when the patient was moribund. General sepsis preceded death and rendered any operation improper. The specimen showed the uterine cavity filled with the large submucous myoma, in a state of degeneration; the endometrium was gangrenous. Death was caused by the sloughing of the fibroid and gangrenous endometritis which had produced septicemia. Other specimens were shown of large uterine fibroids removed by hysterectomy and supra-vaginal amputation. Two presented deep-seated fibroids, which were attended by distressing pressure symptoms, in the removal of which the reporter felt that the supra-pubic method of treating the stump would have been extremely difficult, if not impossible.

The occurrence of pregnancy often constitutes a grave complication of uterine myoma, and the majority of cases so complicated require surgical interference, even when the growths do not encroach upon the area of the superior strait in such a way as to make delivery, *per vias naturales*, an impossibility. The records of the cases cited showed the period of gestation to be one of unusual suffering and discomfort with a constant disposition to premature delivery, rendering protracted rest in bed and the free use of anodynes a necessity. When labor comes on, it begins usually with premature rupture of the membranes, and is characterized by the irregularity, inefficiency and severity of the pains. The paper was followed by an instructive and spirited discussion. DR. B. F. BAER boldly maintained that a woman suffering with fibroid tumors of the uterus ought not to be required to furnish citizens to the State, unless she wished to do so, with a full knowledge of the risk incurred by pregnancy, and if she demanded relief, it was the duty of the surgeon not to withhold that relief, but to proceed to operate, either by removing the uterine appendages or by hysterectomy. He reported a case of a woman who was four and a half months pregnant when the tumor dropped into the pelvis and pushed the uterus up into the abdominal cavity; it could not be replaced and the woman was exceedingly ill. He advised laparotomy and performed a hysterectomy, because the growth appeared sarcomatous, amputating at the supra-vaginal junction. The patient made a good recovery and is still in perfect health, although the operation was done a number of years ago.

DR. CHAS. P. NOBLE spoke of the dangers of peritonitis and sepsis, and said that the mortality of the complication was 50 per cent. When the fibroids are of considerable size, the case should not be left to nature. He advocated a Porro operation rather than a subsequent hysterectomy; but the cases have to be individualized and can not be treated according to any fixed rule.

DR. M. PRICE favored the Porro operation, and especially directed attention to the mental state attending fibroid tumors. These patients are not only chronic invalids, but many of them are in a nervous condition bordering on insanity. He said that in the last two years he had not operated upon a single one that was not mildly insane.

DR. J. M. BALDY considered that the dangers of the complication had been much exaggerated, and cited cases where all the preparations had been made for a Cæsarean section, but the women had delivered themselves without any difficulty. He would be very loth to act upon the assumption that because a woman has a fibroid she should be denied children, or that her pregnancy might be ended if she wished to have it so. He mentioned a case in which celiotomy had been decided upon for fibroid growths, but for some reason it was not performed; the woman afterward went home and became the mother of a child. He referred to one of DR. FULLERTON'S cases which had been three times delivered and had two living children. He denied that any special nervous conditions or mental disturbance belong to the clinical history of fibroids more than to other instances of pelvic disease. He objected to the extra-peritoneal method of treating the stump, and asserted that hernia was a common result. By dropping the stump, he eliminates a large and important factor in the production of abdominal hernias.

The difference of opinion brought out in the foregoing discussion, serves to illustrate the unsettled state of the subject at the present time. There is much information to be gained as to the direct and indirect causes of fibroid growths of the uterus, and their life history, before anything like a settled rule of practice can be formulated which would apply to a large proportion of the cases. Especially are the difficulties of the problem enhanced by the unusual complication of fibroids with pregnancy. When authorities disagree so widely as to advocate hysterectomy or removal of the uterine appendages, in opposition to those who are perfectly willing to allow the case to proceed to full term without interference or only symptomatic treatment, the plain ordinary everyday practitioner will have to rely upon his own judgment in the management of his cases, feeling assured that whatever course he decides to pursue, he can find good authority to sustain him. As a matter of fact, no general rule can be laid down for the management of these cases of complicated pregnancy. Each case must be treated on its individual merits in the pious spirit in which good old AMBROISE PARÉ practiced surgery, saying to his patients: "*Je te panse, Dieu te guerit.*"

A GENERAL WITH PRONOUNCED SANITARY IDEAS.

GENERAL DUCHESNE is the chief commander of the French forces that are to be sent to Madagascar. He has recently issued an order or proclamation, showing the profound respect he has of sanitary regulations for troops that are to go to a strange country and climate. In this order he advises with his men to the end that they will observe with strictness all the regulations framed to protect the troops from disease, and especially from malarial disease. On this point he is quoted in the European edition of the *Herald* as saying:

"One of the greatest dangers which the troops will have to encounter will be that of the malarial fever of the country. All possible measures have been taken to combat it, and the GENERAL hopes that the efforts of the sanitary staff will be rendered efficacious by the obedience of the troops to the orders given them. 'The best commanded regiment,' he says, 'will for me be the one in which the fewest cases of illness occur.'

"The most severe orders are given for the humane treatment of the natives. All the persons and property of the friendly Malagasy are to be respected, and the soldiers of the enemy, once they are disarmed, are to be accorded all the rights of civilized warfare and are to be treated with justice and humanity."

AMERICAN MEDICAL EDITORS.—DR. CANFIELD, of the *Maryland Medical Journal*, has completed the arrangements for the editors' banquet. Members of the Editors' Association desiring to attend will please send him their names at once, stating the number of plates they wish reserved.

NOTICE.—All persons attending the meeting who desire to secure return transportation at Baltimore, must obtain a certificate from the agent of the railway at the starting point, showing that they have paid full fare to Baltimore.

CORRESPONDENCE.

Pennsylvania and "That Awful Code."

MARIENVILLE, PA., April 15, 1895.

To the Editor:—In the JOURNAL of April 13, Dr. Simonton takes one more whack at the Code, and the Philadelphia County Medical Society. That society is amply able to defend itself without my help. But the position of the Philadelphia County Medical Society is the position of the Pennsylvania State Society, and as a member of that body I wish to say a few words in reply to the Doctor and incidentally to all others concerned. I was the wicked fellow who presented the resolutions regarding the JOURNAL and the proprietary advertisements at the Philadelphia meeting, 1894. Those resolutions were handed me by some of the most distinguished members of the Society. Dr. E. E. Montgomery, one of the AMERICAN MEDICAL ASSOCIATION Trustees, was, I think, on the floor of the convention at the time. Not a man there but what respected and honored Dr. Montgomery, and our personal or professional relation to him was not called in question. So with the Editor; every member of the Pennsylvania Society who knows of the ability of Dr. Hamilton has but the highest praise for the successful management of the editorial department of the JOURNAL. If this subject must be opened again let it be in that spirit, and undue sarcasm and personalities be completely dropped out of sight. They are uncalled for among gentlemen.

Dr. Simonton says: "The only way to have consistency between the Code and the practice of the profession in regard to patent things in general, is to remove the clause referring to the same, from the Code." That is precisely the argument used by the liquor dealers of New York in regard to Sunday opening of the saloon. They say: "The Sunday law is not enforced nor obeyed; therefore the law should be repealed; and the saloon legally be opened." Any one can see that that principle applied to law would soon be subversive of all law—expediency, not right, be the governing principle. Yield to a wrong, instead of maintaining the right. From my point of view, the editorial in the JOURNAL of March 30, "Print the Formula on the Label," covers quite completely the position of the great majority of practitioners. There can be no *great* objection to even a proprietary combination, if the composition is fully known. It is the name, label or mark, that constitutes the copyright or "patent." The mixture, drug or drugs used can not be tied up for exclusive commercial use. There is no law on earth that can prevent a practitioner from using the formula, compounding it himself, or by prescription at his druggist, if he so chooses to do. Proprietaries of that kind, if used by practitioners under the copyright name, are so used for *convenience*, and not of *necessity*. The use of such may possibly be a violation of the letter of the Code, but hardly, I think, of the spirit. Everybody knows that it is the *unknown* quantity that is objected to in special preparations. No man can intelligently defend the use of a "secret nostrum." The practitioner has a right to know, and in all cases ought to know *what* his patient is taking. It is tough enough on the laity for us to experiment on them, as we often do, with a known quantity, but to fire into them *only a name*, so far as our knowledge goes, is tough on the profession, as well as the laity, and is utterly devoid of science.

Dr. Simonton draws comparisons between patented surgical instruments and secret nostrums. In one sense there is no comparison. The practitioner *knows* what he has got in an instrument; there is no secrecy, no going it blindfold. Let me illustrate this whole subject by a few fancy pictures: Many years ago I sat looking down on President (then Professor) Donald Maclean, screwing down an aortic compressor on a patient. It was not a very fancy affair, if my recollection serves me correctly. He had it made by a blacksmith, and the Doctor had tried it on himself the day before. This instrument successfully controlled the circulation at and beyond the field of operation. Suppose Dr. Maclean had used that instrument then and for all these years on the quiet, and next May appeared before the AMERICAN MEDICAL ASSOCIATION, as its honored President, and said: "Gentlemen, years ago I contrived an instrument that has been successfully used in my hands for such and such purposes. For $10 I will give you the right to use it, and explain its merits." Suppose he turned from the surgical to the medical, and continued in this way: "At the same time that I thought out this instrument some one blundered, and in consequence a number of students went down with the smallpox. I had unusual opportunities to study out the disease and its treatment, and discovered a remarkable remedy. I am having this put up in convenient form, and you can be supplied at the rate of $1 per ounce; a small sample will be supplied gratis." Fancy Dr. E. E. Montgomery saying: "Gentlemen, I also, like the President, have made an important discovery; a new operation for the removal of fibroid tumors. Any of you who have patients afflicted in that way who will send them to me will receive 10 per cent. of the amount charged. Operations are private." Fancy our own Dr. Hamilton writing an editorial on the cause of epilepsy, and winding up with: "I have found a most remarkable remedy for this disease, and the members of the AMERICAN MEDICAL ASSOCIATION can have it for $2 per ounce."

I have used these names because that sort of thing would be so utterly foreign to the nature and the disposition of these gentlemen that misconstruction of the picture is impossible. Fancy the picture, however, and then imagine the result. Yet all this would be just as legitimate as an advertisement of an unknown and unknowable remedy in the ASSOCIATION JOURNAL.

Dr. Simonton speaks of the inconsistency of we sticklers for the Code in taking other medical journals that have the same objectionable advertisements. So we do, but we do not take them *for the advertisements*, but in spite of the advertisements. We take them on account of valuable reading matter. Because a private publisher uses the brains of an able editor to promote the value of his advertising pages is no reason why the brains of the JOURNAL editor, and the wealth of knowledge he succeeds in getting from his contributors should be used for the same purpose. I am safe in saying that every man of us is proud of the scientific and literary ability displayed in the JOURNAL. Hence we regard it as a shame that its advertising pages should in any sense lower its character and tone. Dr. Simonton's tirade on the inconsistency of the membership is exceedingly weak. Inconsistency of membership or of followers is no argument for the repeal of a standard of faith. The proper thing to do is to lift the erring brother, if possible, to the level of the standard. We can not afford to throw down the fence in this respect; it lowers us to the level of a trade, and finally lands us in a position to say to suffering humanity: "You are sick; you will die without help; we have the secret of your recovery; pay our price and live. If you can not raise the dollars, die." That is the logical outcome of secret proprietary remedies.

From the Pennsylvania point of view, it is a question of *right and wrong*. In that light, the profession of the Keystone State are not to be moved from their sense of duty, by the calling of names by the gentleman from California. The trouble really seems to hinge on the question of finance. I think that can be easily removed by all of us "whooping it up" for the JOURNAL and making it pay, minus the objectionable advertisements, by a large subscription list. That is a much better way than lowering the columns to the level of the patent medicine almanac. No bickering, gentlemen. "Let all things be done decently and in order."

S. S. TOWLER, M.D.

Antitoxin.

PHILADELPHIA, April 19, 1895.

To the Editor:—I have had my attention called to your editorial, in the April 13 issue of our valuable JOURNAL, in which you describe "A Fatal Result following a Hypodermic Injection," Behring's antitoxin being the injected remedy. I send you the following notes, trusting that they will be accepted in the spirit in which they are offered. The only comment I have to make, is, that had I known the opus number of the antitoxin used in Brooklyn, I should probably have refused the bottle sent to me.

Friday, April 4, I was called to see Mrs. L. S. W., aged about 30. Her statement was, that on the previous evening she had gone to the theater and on returning home had felt no particular symptoms other than a stiffness in the throat and general malaise. Friday morning she found spots in her throat and at noon had become so depressed as to become alarmed in regard to her condition. The temperature was 101. 3-5, respirations 22, and pulse weak, thready and 90. There was excessive dysphagia, the face was slightly flushed, the eyes bright and feverish, and the patient exceedingly languid and anxious. On examining the throat, I found the velum pendulum palati of a dark purplish red, the anterior and posterior half arches being of the same color, saving a small area on the right posterior half arch, which was covered with a suspicious gray membrane about a quarter of an inch in length, and an eighth of an inch in breadth, easily removed by a dossil of cotton on an applicator. The tonsils were apparently normal, the post-pharyngeal wall acutely hyperemic. There was no engorgement of the nasal mucous membranes, though there was a rather too free discharge of a watery character from the nose. Patient was at once placed upon the most vigorous measures, as the patch seemed exceedingly suspicious. At 6 o'clock in the evening of the same day, the spot on the right posterior half arch had entirely disappeared, but the velum and half arches otherwise presented the same appearance as earlier in the day. The patient's face, however, was greatly swollen, hands slightly puffy, and the statement was made that the urine had been very scanty. The only change in the treatment made, was the addition of strophanthus and digitalis. On the following morning at 8 o'clock there was still no recurrence of the patch on the right side, but there was a patch on the left side exactly simulating that which had disappeared from the right. All of the half arches, moreover, were very much more swollen and the velum was slightly edematous, while the injection of the posterior pharyngeal wall seemed rather to be increased. At noon, sterilized tubes had been secured and inoculation was made. By the kindness of the Polyclinic Hospital Laboratory, the inoculated tube was promptly placed under the most favorable conditions for an early examination. The report from the laboratory was made in a little over twenty-four hours and confirmed in every way the opinion first formed, that the case was one of diphtheria. In the interval, the area covered by the membrane on the left side rapidly increased, the spot first affected on the right side became again involved, and the membrane there rapidly spread until it completely covered the posterior half arches, which were greatly swollen and thickened, and involved the upper third of the anterior half arches on both sides, while a small patch also appeared upon the velum which was now more edematous. To further complicate matters a small circular spot appeared on the posterior pharyngeal wall nearly centrally placed. All this in spite of the most active measures taken to combat the disease. The patient's general condition fortunately rather improved, the temperature fell to very slightly above normal, the pulse somewhat improving in character, and the action of the kidneys greatly improved.

April 8, I obtained through Frank E. Morgan, pharmacist of Philadelphia, a white labeled bottle of Behring's antitoxin solution. The entire contents of the bottle were promptly injected in the left thigh at its inner aspect and middle third, two punctures being made, antiseptic precautions being taken. The patient complained of very little distress, and the fluid was rapidly absorbed. The local treatment, as well as the general treatment, was in no way altered. The change in the appearance of the half arches at the end of twelve hours was simply astonishing. During the late afternoon and evening of the day of the injection, the attendants reported to me that the membranes came away in great masses, and on the morning of April 9, I found nothing but a series of healthy looking ulcerations on the anterior posterior half arches, velum and pharynx. Frequency of the local applications as well as their character were greatly changed, with the idea of simply encouraging rapid healing of the parts. The patient progressed without accident of any kind, and on Friday, April 12, the throat was perfectly clean, and practically normal, barring the slight hyperemia of the velum. On Monday April 15, even this slight hyperemia had disappeared and the patient was discharged after having been subjected to a thorough antiseptic bath from head to foot. At this time, Dr. C. P. Franklin, who had assisted me in the treatment of the case, called my attention to your JOURNAL, and to the fact that the number on the bottle of Behring's solution corresponded with the number of that used in the Brooklyn case, namely, operation 159.

Very sincerely yours, CONRAD BERENS, M.D.

Cherokee Strip Fossil.

The Remains of an Enormous Extinct Animal Found by a Settler.

HUMBOLDT, ALLEN CO., KAN., April 3, 1895.

To the Editor:—The fossil skeleton of a huge sea animal was recently discovered by a settler in the Cherokee Strip, while searching for driftwood along the banks of the Arkansas River. The beak or bill, was projecting from the sand and on breaking it off, it was found to be bone. This aroused the finder's curiosity to the extent that he set to work to exhume the skeleton. The beak or bill, a few vertebræ, some ribs and propellers were in a fair state of preservation, but the remainder crumbled as soon as exposed to the air.

The discoverer stored his find in a shed, and thought little of its importance. By chance, Henry Patterson heard of it, went to the Strip and purchased it, had a wagon with a cushioned platform built, suitable for the safe transportation of the relic of the antediluvian period, and is now realizing a bonanza from his investment, exhibiting it in the cities and towns of southeastern Kansas. A description of the

remaining bones was sent to the Director of the National Museum at Washington, and the following reply has been received by me:

"The matter is one of great interest from a paleontological point of view, and I have taken the liberty of at once submitting your letter to the Director of the Smithsonian Institution, asking him to write you in regard to the matter and send a qualified paleontologist to investigate the discovery, classify or coin a name for it, and obtain it. The skeleton you speak of is certainly larger than any on record anywhere in the world and it is highly important that it should be preserved in the National Museum."

It has been named by local scientists *monocerosichthysaurus* and *plesiosaurus*. It evidently belongs to neither. By comparisons with descriptions, and from recollections of the larger casts of fossil saurians, the head and vertebræ belong to neither of them. The eye sockets are four feet in diameter, with the supra-orbital notch the same as in the human cranium, with a space of twenty inches between the sockets, making the diameter of the skull nine feet and eight inches, with a small brain cavity comparatively. The vertebræ measures twelve inches each way, and the distance from tip to tip of the transverse processes is forty inches, and resembles those of a mammal rather than a fish. The os hyoides is thirty-eight inches long, a rib thirteen feet eight inches long, circumference thirty-three inches, and two triangular-shaped bones corresponding to right and left, three and one-half by twelve feet, the use of which is conjectured, but supposed to be propellers or fins.

Local scientists who have expressed an opinion, and many have examined it, do not pretend to name it and believe it to belong to no recorded species. It has been variously estimated to have been from sixty to three hundred feet long. I think the latter more nearly correct.

Yours truly, R. L. PATTERSON, M.D.

Expert Witnesses.

CHICAGO, ILL., April 20, 1895.

To the Editor:—The following bill is now before the Illinois State Legislature as House Bill 767, and the Committee on Legislation of the State Medical Society asks every member of the profession in the State to assist in its passage by writing at once to his State Senators and Representatives, urging their support of the measure.

D. W. GRAHAM, Chairman.

A BILL.

For an Act to Regulate the Taking of Expert Testimony in Civil and Criminal Proceedings.

SECTION 1.—*Be it enacted by the People of the State of Illinois, represented in the General Assembly*, That in any case on a trial in a court of record in this State where expert testimony is to be introduced by both the prosecution and the defense, and also in any other case in the discretion of the court, the presiding judge shall, either of his own motion, or at the request of either party to the suit, subpœna one or more persons who shall be known as court witnesses.

SEC. 2.—Such court witnesses shall be citizens of the State, of known personal probity, and only such as are recognized in the communities where they reside as having special knowledge and experience pertaining to the subjects upon which they are to testify; and if physicians, they shall have been not less than five years in lawful and active practice.

SEC. 3.—The presiding court shall fix the fees of such court witness or witnesses, but in no case shall the fees allowed such court witness exceed fifty ($50) dollars per day. Such witnesses shall be paid in the manner provided by law for other witnesses, except that in criminal cases the fees of such witnesses shall be paid by the county.

Wants It Published.

[TELEGRAM.]

PHILADELPHIA, PA., April 23, 1895.

To the Editor:—Philadelphia County Medical Society earnestly requests immediate publication of decision of Judicial Council referred to in Editor's comment on Dr. Roberts' letter. CHARLES H. THOMAS, Chairman.

ANSWER:—The Chairman was informed that permission would be asked of the Chairman of the Judicial Council to print the decision as requested, and Dr. Brown was accordingly asked by the same mail for such permission.

ASSOCIATION NEWS.

The Quimby Amendment.

JERSEY CITY, N. J., April 19, 1895.

To the Editor:—Please find inclosed a letter from Dr. Strong (of Colorado) to me, which I would like very much to have you publish in the JOURNAL. This letter of Dr. Strong's advocates the amendment which I proposed at San Francisco last year. You may remember that I offered to amend the Constitution by striking out the words, "Surgical Instruments" in line 2, clause 5, Article 1. These words should never have been placed in the Constitution in their present relation, as they are disjointed and out of harmony with the rest of the Article. It causes a severe strain of the imagination to find any logical relation between quack or patent medicines and surgical instruments. This amendment I offered last year, I think ought to pass at our coming meeting, as it is in the line of progress of the present age, and in exact justice to the laborer, who is certainly worthy of his hire.

I hope, Mr. Editor, you will see your way clear to advocate the amendment in our valuable JOURNAL.

Yours very truly, I. N. QUIMBY, M.D.

April, 1895.

Dr. I. N. Quimby,

Dear Sir:—Permit an old M.D., who has seen two generations of Doctors of Medicine come and go, to express his gratification upon the resolution offered by you at the last meeting of the AMERICAN MEDICAL ASSOCIATION, to so amend the so-called ethical Code of the profession, as to encourage useful surgical inventions, by permitting members of the profession to avail themselves of the protection the government furnishes to the inventor of any novel and useful instrument or appliance. I think I speak *auctoritate doctissimi Hippocrati* in what I have to say briefly in support of your proposed amendment to our Code.

To those who know my horror of all patent nostrums, of all quacks and quackery, of all self-advertising by medical frauds, I need make no personal defense for my argument. To any one who has witnessed the wonderful achievements of the present century in the domain of useful inventions under the protection and stimulus of patent and copyright laws, inventions that have wrought changes in human existence, human progress and human enjoyment upon the earth, more marked and marvelous than the dream of Utopia or than the imagination portrays of the possible enjoyments permitted to the inhabitants of some far-distant and favored planet, the fact that there still exists among the musty unwritten statutes of the medical profession, a law in effect prohibiting the granting by the government to any member of that profession any protection, any property right, in an original discovery or invention made by him for the benefit of his fellow-men, however useful to the world, and at whatever sacrifice of time, and by whatever exercise of mental gifts; such a law must seem a strange anachronism—a relic of some past age of ignorance, the age of Savonarola or Galileo, when it was a crime to think, to invent, to make any progress that should endanger the hold of superstition upon the human mind. God knows that our profession is a most toilsome, weary, almost slavish vocation—to live to toil, to toil to live; to die generally *de bonis non*, trusting our brief and narrow fame to the kindly memory of surviving neighbors, and our families to the tender mercies of the followers of more lucrative callings.

Can it be that there is a moral wrong in encouraging members of our profession, gifted with inventive power, to discover new and better instruments and appliances to be used in the profession of surgery? In all the most advanced nations a reward is supposed to be offered for every useful invention. This is done by the government protecting the property of the inventor; and this protection is based upon the indisputable moral right of every man to the possession of what he shall create or produce—hence patent and copyright laws. Most of the inventions which have added so much to the well-being of society are the result of the property protection afforded by the patent law. It savors of barbarism to argue that the man who manufactures reapers and steam engines and telegraphs has a better property right than the man who invented them, without which in-

vention they would not be manufactured. While it is not possible to know how many of the most useful inventions are the result of the reward thus offered to the discoverer and producer, we do know that in those countries where no such reward is given, through the protection of the government to the inventor, there has been little progress made from the semi-barbarism of the Dark Ages.

The arguments against giving to the inventors in surgery the protection guaranteed to all other novel and useful inventions, rests upon what might be called a moral theory, which is expressed by saying that it is immoral for a surgeon to accept the reward that all other inventors receive. If so, then it is immoral for the government to create and protect property-rights in inventions, the purpose of which is to relieve physical suffering, while it is in every way proper and commendable that the government should protect the property-right in a locomotive, an incubator or a mouse trap. This conception of the distinction between these two classes of inventions and inventors rests upon the supposed deteriorating influence the giving of such property-right would have upon the character of the inventor, and upon the *morâle* of the medical profession—for I insist that my assumption is logical, that if by reason of its bad influence upon the profession, of rewarding the surgeon who by long study, experiment and expense, does invent a successful instrument, he should not be permitted to accept any compensation for his time, labor and expense; then it is wrong for the government to offer such a compensation. It has never been contended that such a reward has had a deteriorating or in any way baneful influence upon the character of the great inventors in the field of the useful arts and in the scientific and literary vocations. In the half century most productive of such inventions, beginning with Morse and coming down to Bell and Edison, it has never been contended that they or Tennyson and Browning and Longfellow and Emerson and Froude and Bancroft and Macauley and Spencer and a hundred others, venerable, lovable, adored by all good men, and who have done much to elevate and sweeten human life, did anything immoral or anything that cast the thinnest cloud, the adumbration of a shadow upon their glorious lives and their eternal fame by accepting the reward given by the government in the property-right it guaranteed them, in the divine creations they gave to world. Except for that reward, most of the best things in all our literature would have no existence, for these men lived by their pen. Longfellow resigned his professorship at Harvard that he might give us "Evangeline"; Emerson left the old church in Boston, where his unremembered ancestors preached, that he might give us "The Conduct of Life"; Spencer quit the office of an engineer that he might think and evolve and write. Macauley relinquished a government salary that he might give to posterity his great prose epic of the Stuart dynasty. Except they had assurance that their country would protect her most worthy citizens against a piracy less honorable than Algerine, there had been no "Evangeline," no "Conduct of Life," no Macauley's "History of England." If there be one field where, above all others, every possible encouragement should be offered by the government and the profession to the devotion of the most intelligent and able minds in the discovery of health-saving, pain-saving appliances, that field is surgery. It is but a remnant of an old and abandoned ethical theory that there can be morally no *contract* entered into by a professional man that his services shall be paid for, and that the *honorarium* must ever be his entire dependence. We have come upon a practical age, a common sense age, of which one important postulate in its moral code is that every man shall be entitled to just compensation for his services to mankind in whatever field he shall choose to labor. Wishing you all success, I am yours truly,

H. STRONG, M.D.

To the Medical Profession.

At the meeting of the AMERICAN MEDICAL ASSOCIATION, held in the city of Washington, in 1884, it was a matter of remark that among the numerous statues of eminent men of National reputation at the National Capital, there was none of any representative of the medical profession, and the suggestion that in Dr. Benjamin Rush there was a man so conspicuously identified with the period of the Revolution as to make him especially entitled to this distinction, was enthusiastically received and a committee appointed by the President, Dr. Austin Flint, to undertake the collection of the necessary funds. For various reasons, chiefly the difficulty of appealing directly to the widely distributed members of the profession, the enterprise has made slow progress, and statues to men who did not have Rush's pre-eminent claim as a founder of the Republic have been successfully completed by bodies of comparatively very much smaller membership.

The most imposing statues of military heroes at the Capital have cost from $20,000 to $50,000, and having in mind the great services rendered by Dr. Rush to his country, the dignity and paramount position among learned bodies of our profession which is to be honored through him, and the many thousands of the intelligent and cultivated citizens of the community who fill its ranks, at least this minimum sum should be collected for the procurement of a fitting memorial. Fifty cents from every member of the profession would suffice to erect the most imposing statue at the Capital; but allowing for the assumed indifference of one entire half of the profession, the committee hoped that subscriptions of $1 would have been spontaneously and speedily tendered. In this they have been disappointed, and it must now be a matter of pride and duty with every member of the profession, not only to contribute but to assist actively in inducing his colleagues, friends and acquaintances to forward to the committee without further delay, as much as they are able, bearing in mind that this statue is not merely to Benjamin Rush, Doctor in Medicine, however successful as a practitioner, accomplished as a teacher, able as a professor, eloquent as an orator, elegant as a writer, profound as a thinker, exemplary as a citizen, and eminent as alienist, sanitarian and social reformer, but to the "Father of Scientific Medicine in America," and "the most distinguished physician this country has ever produced." Member of the Continental Congress, signer of the Declaration of Independence, member of the convention which framed the Constitution of the United States, and first Surgeon-General and Physician-General of the Army of the Revolution. Eighty-two years after his death from the epidemic of typhus he was combating, his fame is as resplendent as during the half century of his life, when he was so conspicuous a figure in our national history. No similar train of circumstances has since arisen, nor probably can ever again arise, to enable any other man, however gifted, to acquire the distinction that has made his memory a sacred trust with every medical man of this day and of the future. Let us all, therefore, earnestly unite in fulfilling the obligations of that trust.

THE COMMITTEE.

Section on Surgery.—Preliminary Program.—Joseph Ransohoff, Cincinnati, Chairman; R. H. Sayre, New York, Secretary.

TUESDAY AFTERNOON, MAY 7.

1. Address of Chairman, Joseph Ransohoff, Cincinnati Ohio.
2. Cystoscopy, Catheterization of the Ureters and Catheterization of the Kidneys in the Female, by Howard A. Kelly, Baltimore, Md.
3. Aëro-Urethroscopy with the Exhibition of a new Instrument, by W. K. Otis, New York, N. Y.
4. The Value of Urethroscopy in Chronic Urethritis with demonstration of the Nitze-Oberländer, Casper, and Posner Urethroscopes and other Urethral Instruments, by Ferd. C. Valentine, New York, N. Y.
5. Movable Kidney, by Homer Gage, Worcester, Mass.
6. Movable Kidney, by W. E. B. Davis, Birmingham, Ala.
7. The Radical Cure of Hydrocele, by D. C. Hawley, Burlington, Vt.

WEDNESDAY MORNING, MAY 8.

8. Appendicitis, by John B. Deaver, Philadelphia, Pa.
9. Atypical Cases of Appendicitis, by J. B. Emmert, Atlantic, Iowa.
10. Report of One Hundred Cases of Appendicitis, by S. F. Forbes, Toledo, Ohio.
11. Paper, by J. McFadden Gaston, Atlanta, Ga.
12. What Advance has been made in the Surgical Treatment of Hernia, by W. B. DeGarmo, New York, N. Y.

WEDNESDAY AFTERNOON, MAY 8.

13. The Treatment of Malignant Tumors by the Toxins of the Streptococcus of Erysipelas, by Nicholas Senn, Chicago, Ill.
14. Tumors of the Mammary Gland, by W. L. Rodman, Louisville, Ky.

15. Foreign Bodies in the Esophagus, and a Report of five Esophageal Tumors, by A. Vander Veer, Albany, N. Y.
16. Is Total Extirpation of the Rectum ever Justified, by J. M. Matthews, Louisville, Ky.
17. Colotomy vs. Extirpation in Cases of Cancer of the Rectum, by L. H. Adler, Philadelphia, Pa.
18. Branchiogenous Carcinoma, by Charles A. Powers, Denver, Colo.
19. An Original Osteoplastic Operation for the Removal of the large vascular Tumors growing in the Vault of the Naso-Pharynx, Antrum of Highmore, Spheno-Maxillary, and Pterygo-Maxillary Fissures, with presentation of Patient, by John A. Wyeth, New York, N. Y.
20. Electrolysis in the Treatment of Sacculated Aneurysm, through Introduced Wire, with Report of a Successful Case, by D. D. Stewart, Philadelphia, Pa.

THURSDAY MORNING, MAY 9.

21. Scientific Uses of the Surgical Flap, by George Wiley Broome, St. Louis, Mo.
22. Effects of the New Bullet, by J. D. Griffiths, Kansas City, Mo.
23. Asepsis in Private Practice, by Carl Beck, New York, N. Y.
24. The Surgical Technique of Aseptic Wounds, by Henry O. Marcy, Boston, Mass.
25. Flat-Foot—Supra-malleolar Osteotomy with Report of a Case—Photographs and Specimens of Feet of Man, Orang, Baboon, Chimpanzee and Gorilla, by B. Merrill Rickets, Cincinnati, Ohio.

THURSDAY AFTERNOON, MAY 9.

26. Diagnosis and Treatment of Tumors of the Brain, with a Report of Seven Cases, by Emory Lanphear, St. Louis, Mo.
27. Presentation of a Case of Microcephalus Treated by Extensive Craniotomies, by Ernest Laplace, Philadelphia, Pa.
28. Gall-Stones in the Common Duct and their Surgical Treatment, with remarks on the ball-valve action of floating Choledochus Stones, by Christian Fenger, Chicago, Ill.
29. Skin Grafting after the Method of Thiersch, by J. C. Oliver, Cincinnati, Ohio.
30. Hypertrophy of the Thyroid Gland; an Experimental Study, by Wm. S. Halstead, Baltimore, Md.

FRIDAY MORNING, MAY 10.

31. A Confusion of Important Terms and some of the Consequences, by R. Harvey Reed, Mansfield, Ohio.
32. Excision, Erosion and Amputation in Joint Disease, by De Forrest Willard, Philadelphia, Pa.
33. Exsection of the Knee-Joint, with Report of a Case of complete Dislocation of the Knee, of nine years' standing, and with especial Reference to Methods of Fixation, by S. F. Forbes, Toledo, Ohio.
34. The Relative Frequency of Joint Tuberculosis, by——

FRIDAY AFTERNOON, MAY 10.

35. The New Surgical Splinting—Report of Cases Exemplifying it, by E. A. Tracey, Boston, Mass.
36. A Simple Method of Dressing Fractures of the Extremities auxiliary to the Bandage, by John E. Link, Terre Haute, Ind.
37. Deformities following Fractures of the Shafts of Bones, by Thomas H. Manley, New York, N. Y.

Section on Laryngology and Otology.—J. F. Fulton, St. Paul, Minn, Chairman; Thos. J. Gallaher, Pittsburg, Pa., Secretary; Executive Committee: E. Fletcher Ingals, Chicago, Ill.; E. L. Shurley, Detroit, Mich.; J. E. Boylan, Cincinnati, Ohio.

TUESDAY AFTERNOON, MAY 7.

1. Address of Chairman, John F. Fulton, St. Paul, Minn.
2. Electrolysis in Treatment of Intra- and Post-Nasal Fibroid Tumors, by J. F. Schadle, St. Paul, Minn.
3. Deflection of the Nasal Septum, by Eugene S. Talbot, Chicago, Ill.
4. Electro-vibratory Massage of the Turbinated Tissue, by J. Mount Bleyer, New York, N. Y.

WEDNESDAY MORNING, MAY 8.

5. Electrolysis by a Current Controller for the Reduction of Spurs of the Nasal Septum, by W. E. Casselberry, Chicago, Ill.
6. The Vaselin Spray-producer vs. Surgical Means as a Successful Treatment of Nasal Inflammation, by Thos. F. Rumbold, San Francisco, Cal.
7. Carcinoma of Larynx, with Report of Case, by Norval H. Pierce, Chicago, Ill.
8. The Bleeding Polypus of the Nasal Septum, by W. Freudenthal, New York, N. Y.
9. A Case of Congenital Mucous Polypus of the Nose, with Remarks, by Dunbar Roy, Atlanta, Ga.
10. History of a Case of Recurrent Nasal Fibroma, by Price Brown, Toronto, Can.

WEDNESDAY AFTERNOON, MAY 8.

11. Operative Treatment of Purulent Disease of the Antrum of Highmore, with Exhibition of New Instruments, by Walter J. Freeman, Philadelphia, Pa.
12. Report of a Case of Caries of the Sphenoid Bone, with Specimen, by Ewing W. Day, Pittsburg, Pa.
13. Further Observations on the Sub-mucous Injection of Creasote in Laryngeal Tuberculosis, by Walter F. Chappell, New York, N. Y.
14. Proper Climate for the Treatment of Consumption with Laryngeal Tubercular Lesions, by John N. MacKenzie, Baltimore, Md.

THURSDAY MORNING, MAY 9.

15. (*a*) Breathal Bands, with Demonstration in Situ Naturale; (*b*) Relations of Food to Laryngology, by E. Cutter, New York, N. Y.
16. Laryngology as a Diagnostic Factor in Gynecology, by Carl Seiler, Philadelphia, Pa.
17. Notes on Several Cases of Laryngeal Neuroses, by S. K. Merrick, Baltimore, Md.
18. A Case of Recurrent Fever of Two Years Duration, Cured by the Removal of a Rhinolith; Chemic Analysis of Rhinolith and Nucleus, by W. Sheppegrell, New Orleans, La.
19. New Septum Forceps, by A. J. Erwin, Mansfield, Ohio.

THURSDAY AFTERNOON, MAY 9.

20. Excision of the Membrana Tympani, Malleus and Incus, in Chronic Purulent Otorrhea, by Chas. H. Burnett, Philadelphia, Pa.
21. Preventable Deafness and its Influence on Career, by Jas. G. H. Nichols, New York, N. Y.
22. What are the Curative Effects of Pneumo- and Phono-Massage on the Middle and Internal Ear, by Louis J. Lautenbach, Philadelphia, Pa.
23. What the Patient Expects and What We Can Do in Chronic Catarrh of the Tympanum or Middle Ear, with Deafness, by Lawrence Turnbull, Philadelphia, Pa.
(Discussion to be opened by Dr. H. V. Würdemann, Milwaukee, Wis.)
24. Fibrino-plastic Exudates, Etiology and Pathology, with Report of two Cases, including Laboratory Investigation, by D. Braden Kyle, Philadelphia, Pa.
25. A Further Contribution to the Subject of Middle Ear Operations, by S. MacCuen Smith, Philadelphia, Pa.
26. The Importance of Aural Anatomy in Routine Clinical Practice, illustrated with Stereopticon, by B. Alexander Randall, Philadelphia, Pa.
27. Behold, "They Tinker," by J. G. Carpenter, Stanford, Ky.
28. The Surgical Treatment of Chronic Suppurating Otitis Media, by J. H. Bryan, Washington, D. C.

FRIDAY MORNING, MAY 10.

29. The Upper-Tone Limit in the Normal and Diseased Ear, as Determined by the Galton Whistle, by H. A. Alderton, Brooklyn, N. Y.
30. The Causes of Halitosis or Fetid Breath, by Wm. T. Cathell, Baltimore, Md.
31. Venous Cavernosa of the Nasal Mucous Membrane, by F. E. Boylan, New York, N. Y.
32. A Double Pediculated Naso-Pharyngeal Myxo-Fibroma, by C. W. Richardson, Washington, D. C.

SOCIETY NEWS.

Rocky Mountain Medical Association.—The surviving members of this Association will meet as the guests of Dr. John Morris, Secretary and Treasurer, at the Athenæum Club, Baltimore, on Tuesday evening, May 7, at 6:30 o'clock, P.M.

Association of Acting Assistant Surgeons of the U. S. Army.—A special meeting will be held in Baltimore, Md., May 8, during the coming session of the AMERICAN MEDICAL ASSOCIATION. It is earnestly desired that every member of the Association will make an effort to be present, to consider matters of importance. By direction of the President.

W. THORNTON PARKER, M.D., Recorder, A.A.A.S.
Groveland, Mass.

BOOK NOTICES.

Twentieth Century Practice. An International Encyclopedia of Modern Medical Science. By leading authorities of Europe and America. Edited by THOMAS L. STEDMAN, M.D., New York City. In Twenty Volumes. Volume II. Nutritive Disorders. New York: William Wood & Company. 1895.

The contributors to this volume are: G. S. Dujardin-Beaumetz, M.D., of Paris;* Sir Dyce Duckworth, M.D., etc., of London; Archibald E. Garrod, M.D., etc., of London; Henry M. Lyman, M.D., of Chicago; Thomas J. Maclagan, M.D., etc., of London; Carl H. von Noorden, M.D., Frankfort-on-the-Main; Max J. Oertel, M.D., Munich.

The topics are: Addison's disease and other diseases of the adrenal bodies; diabetes mellitus; rheumatism; gout; arthritis deformans; diseases of the muscles, and obesity.

The work is well done, as may well be imagined from the names mentioned, but now and then there crops out an eccentricity; for instance, it certainly sounds a little queer to read in von Noorden, page 73, where he writes of the syphilitic theory of diabetes: "More than that, it may be remembered that diabetes was a disease recognized by Greek and Roman physicians, while syphilis is supposed to have been communicated to Europeans by the Indians, after the discovery of America, as if in revenge for their discovery and annihilation." Sprengel, who gave this question much study (Hist. de Med., vol. II, p. 499 et seq.), asserts that the statement of the American origin of syphilis rests on insufficient proof. In the ancient literature of the Chinese and Japanese, in the writings of Moses, the lament of David, and particularly in the Book of Job may be found such descriptions of the disease, and there is little question that in some form or another it has existed from the earliest times.

The chapter on gout, by Professor Lyman, the only American author in this volume, is complete and interesting. Not only is his style pleasant, but there is breadth of treatment and such thorough knowledge of medical literature displayed as to make this section extremely entertaining.

The volume, as a whole, is quite equal to its predecessor.

Transactions of the Antiseptic Club. Reported by ALBERT ABRAMS, a member of the San Francisco medical profession. New York: E. B. Treat. Pp. 206.

This is an alleged funny book, written by a funny man, who seeks to make sport by poking fun at the doctors. It must be confessed that the author sometimes succeeds. The doings of the club are set forth with much humor.

Charaka Samhita. Charaka Samhita, translated into English. Published by AVINASH CHANDRA KAVIRATNA. Published at 200 Cornwallis Street, Calcutta.

This is the twelfth fasciculus of the series, the appearance of which we have from time to time chronicled. This fasciculus, which is not less interesting than its predecessors, touches on the very practical topics of wine, water and milk. The student of medical history must receive this book with the keenest interest. The views of the ancient Hindus on water and milk will be read with pleasure.

NECROLOGY.

GUSTAVUS FRAUENSTEIN, M.D., of New York City, died Feb. 27, 1895. He was an alumnus of the College of Physicians and Surgeons, New York, class of 1868, and a member of the Academy of Medicine, of the County Medical Association, and of the Medico-Legal Society.

AUSTIN SAMUEL CLUTTERBUCK, M.D., died March 28, 1895, at the Memorial Hospital of Morristown, N. J. He was a native of County Tipperary, Ireland, born there Sept. 15, 1864. He came to this country about five years since. His wife was a Dublin lady, Miss Mary Cashin, to whom he was married in Dublin in 1892. He was a licentiate of the Royal College of Surgeons, Ireland, in 1886.

* Deceased.

MOSES D. VAN PELT, M.D., of New York City, died April 13. He was a graduate of the New York University, in the class of 1835. Until recently he had been in practice at 348 Willis Avenue, but he was temporarily removed to New London, Conn, where death took place suddenly in the eighty-seventh year of his age. He was a member of the Academy of Medicine, the Society for Widows and Orphans of Medical Men, and other organizations. His funeral took place April 16.

WILLIAM HUNTER BIRCKHEAD, M.D., of Newport, R. I., died Friday, April 12, aged 56 years. He was the son of James and Eliza Hunter Birckhead, and allied to several old Rhode Island families. He graduated in arts at Trinity College in 1861, and in medicine from the New York College of Physicians and Surgeons in 1864. He became a member of the resident staff of Bellevue Hospital directly after graduation. This was under competitive examination, and at a time when typhus fever was cutting down interne after interne. He passed through his service with credit and advantage, serving chiefly in the First Medical Division. He was interne at the New York Woman's State Hospital, from 1866 to 1868. In the latter year he became attending physician at the Children's Hospital at Newport. He went abroad in 1871, and spent several months at the clinics in Paris and Vienna. From 1869 to 1879 he served as visiting physician and surgeon at the Newport General Hospital. His specialty, as indicated by the line of careful preparatory study, lay in the direction of the diseases of women and children.

GEORGE FRANK WESTBROOK, M.D., of Brooklyn, died April 12, in his forty-fifth year. He was born in St. Louis, Mo.; graduated from the Long Island College Hospital, first in honor, in the class of fifty-seven, of which he was the youngest member. Five years later he was placed upon the Summer Faculty of that school, teaching anatomy and surgical pathology. He held the position of visiting physician to the Methodist Episcopal and to St. Mary's Hospitals for a number of years, and was a member of the American Climatological and Laryngological Societies, of the New York Academy of Medicine, and of most of the Brooklyn medical societies. He was a frequent contributor to medical literature, and had devised, among other things, a daring method of drawing blood from the overcharged right side of the heart with a fine hollow needle, in otherwise hopeless cases of pneumonia. His health broke down four years ago, but he was entirely his vigorous self again for some months last summer, at the end of his long vacation. For the past year he had been writing extensively for a system of therapeutics, and at his death was engaged on a large work on medical diagnosis. He was an independent thinker and a close student, and studied his patients as individuals, with a thoroughness few men use. His patients were his warm personal friends, and he had the power to develop strong personal affection in his students and colleagues through his kindness, his heartiness and his honesty, as well as a wide faith in his quiet power. The cause of his death was pneumonia, the duration of the attack being about four days. He leaves a widow and one child.

GEORGE CUPPLES, M.D., of San Antonio, Texas, April 20.——E. J. Lawton, M.D., of Rome, N. Y., April 19, aged 60.——A. C. Nixon, M.D., of Hanover, Ohio, April 17, aged 72.——John P. Wall, M.D., of Tampa, Fla., April 18.——H. W. Foster, M.D. of Pittsburg, April 14, aged 23.——D. L. Starr, M.D., of Pittsburg, April 13, aged 83.

PUBLIC HEALTH.

Demography of France.—The report of the French Department of Statistics for 1893 has been published in the *Journal Officiel*, from which it appears that there were registered 287,294 marriages, 6,184 divorces, 874,672 births and 867,526 deaths. This is a slight improvement over the figures for 1892, being 18,825 more births and 8,362 less deaths, so that in place of a loss of 20,041 inhabitants for the country in 1892 there is a slight net increase of 7,146. While the total number of marriages shows a falling off of 3,025; it is nevertheless, superior to the mean of 280,000 for the decimal period between 1881-90. The increase in the number of marriages—since the large population immediately following the year 1870-71 has arrived at a marriageable age—renders it probable that the low birth rate for the last twenty

years, on account of the large number of young men killed in battle, will begin to rise again. This seems to be indicated by the increase in 1893 after a three years deficit. Although as above stated, the total number of marriages was 3,025 less than in 1892, yet in 28 departments the number of marriages increased. The number of marriages corresponds to 7.56 per cent. of the population. As usual, the mountain departments, which furnish the most adult emigrants, have the smallest number of marriages—5.6 in the Lower Pyrenees, 6 in the Upper Pyrenees, 6.3 in Corsica and Savoy, etc. The largest proportion, 9.3 per cent., is in the Seine department. The divorces, which numbered 5,772 in 1892, increased to 6,184 in 1893. The northern departments and Paris had the largest number—110 and 171 respectively per 100,000 families. Births, which had been lowered since 1890, increased by 1882, 5, with a total of 874,672, of which 446,957 were boys and 427,715 girls. It may be stated that the increase was general, for it prevailed in 71 departments and only decreased in 16. The general birth rate was 22.9 per 1,000, varying from 14.9 in Gers to 33.5 in Finisterre. Natural births increased in 1893 to 76,562—the highest ever observed, being a proportion of 8.8 per 100. These were most frequent in the departments in the north and northwest; in the Seine department the proportion was 24.3 per 100. Deaths amounted to 867,256, of which number 449,682 were men and 417,844 women, the rate being 22.8 per 1,000. While the mortality in 1893 was 8,362 less than the year preceding, it is still too high. The mortality in France rules the increase or diminution of the population, and the attention of municipalities and hygienists should be directed toward it, especially in the first years of life.[1]

"Kissing the Book."—The Legislature of Pennsylvania has decreed that the oath on the Bible shall be dispensed with. The Governor of the State has indicated that he will approve of the enactments to that end. While it has always been at the option of the swearing citizen to "affirm" or to take the oath, the average person has not known of this alternative, and has done as directed when told to "kiss the book." This latter has the tradition and awe of the ages of court procedures behind it, but the multitude can not fail to recognize the change as a modern reform. The silent work of the theory of the germ production of disease has undermined the time-honored process that has been winked at and tacitly continued by the police and other magistrates. These latter are not all of them "posted" on the properties of a kiss-moistened leather-covered book to hold and to propagate the bacilli of disease, and the presumption is that not a few of the Pennsylvania Dogberries will regard the amending act as a blow against the defenses of justice. To such, no doubt the removal from their desks of the dirty greasy Bible will appear as a misfortune and an ill-advised innovation. To our bacteriologists and sanitarians, however, it will stand as a mile-post on the road of progress.

Diphtheria Antitoxin.—A circular of the Massachusetts State Board of Health.

The investigations of Behring and Roux with reference to the value of serum-therapy in the treatment of diphtheria, and the later experience of its use in diminishing the mortality from this disease, are widely known and fully understood. The State Board of Health, in accordance with its organic purpose as defined in the statutes, having in view the "interests of health and life among the citizens of the Commonwealth," and recognizing the value to the people of any agent which will measurably prevent the ravages of a disease capable of destroying more than a thousand of lives annually in Massachusetts, and of causing suffering which can not be expressed numerically, has in this State prepared a supply of antitoxin, for the benefit, primarily, of such communities as find it difficult or impracticable, for any reason, to supply themselves with the new agent from reliable sources. Great care has been exercised, in the preparation of this supply, to fulfill the most exacting technical requirements for obtaining a pure and trustworthy product, and the tests of its strength have shown satisfactory results. The board does not propose to offer it for sale, but its gratuitous distribution will be under strict conditions, designed to prevent abuse and waste, and to obtain the most beneficial fruits. Each bottle is marked with a number and the date of the preparation of its contents. No antitoxin will be issued except upon a pledge that a full statement of the observed effects of its use will be returned to the board at the termination of the case. In all cases possible, a bacterial diagnosis will be insisted upon. The board desires to emphasize the importance of using such appliances only as are adapted to the proper administration of the remedy, of remembering that experience has demonstrated that antitoxin is most useful in the earliest stages of a diphtheritic attack, and of realizing that trained medical skill is required to administer it successfully. A blank form for the report and a detailed statement of instructions as to methods will accompany each bottle of the antitoxin serum. For the needs of persons living within twenty-five miles of Boston, it will be required, for the present, that personal application at the office of the board shall be made by the attending physician in the diphtheria case, or by some person authorized by him. For the convenience of more distant parts of the State, local agencies at public hospitals or municipal health offices will probably be established by the board in accessible centers. The office of the board (Room 141, State House Extension), is open each week day, except Saturday, from 9 A.M. to 5 P.M., and on Saturday from 9 A.M. to 2 P.M.

SAMUEL W. ABBOTT, Secretary.

State House, Boston, March 25, 1895.

Health Reports.—Sanitary reports to the Supervising Surgeon-General Marine-Hospital Service:

SMALLPOX—UNITED STATES.

Iowa: Des Moines, April 17, 1 case.

Missouri: St. Louis, April 6 to 13, 21 cases and 2 deaths.

Ohio: Cincinnati, March 28 to April 18, 31 cases and 2 deaths; Cleveland, April 6 to 13, 1 case; Coal City, March 28 to April 18, 1 case. (Removed to hospital at Cincinnati); Columbus, April 13 to 20, 1 case; Wellington, March 28 to April 13, 2 cases.

Pennsylvania: Chester, April 13 to 20, 1 case of varioloid; Philadelphia, April 6 to 13, 11 cases.

SMALLPOX—FOREIGN.

Argentine Republic: Buenos Ayres, January 1 to 31, 7 deaths.

England: Birmingham, March 31 to April 6, 1 case; Derby, March 31 to April 6, 1 death; Liverpool, March 31 to April 6, 3 cases; London, March 31 to April 6, 53 cases.

Germany: Prague, March 23 to 30, 2 cases.

Gibraltar: April 1 to 7, 2 cases.

Holland: Amsterdam, March 31 to April 6, 1 case, 1 death; Rotterdam, March 31 to April 6, 3 cases, 2 deaths.

Mexico: Nogales, April 6 to 13, 2 cases, 2 deaths.

Russia: Batoum, March 26 to April 2, 10 cases, 2 deaths; Odessa, March 23 to 30, 3 cases, 2 deaths; St. Petersburg, March 23 to 30, 7 cases, 1 death.

Scotland: Edinburgh, March 31 to April 6, 8 cases, 1 death; Glasgow, March 31 to April 6, 45 cases, 2 deaths.

Switzerland: Basle, March 16 to 23, 7 cases.

YELLOW FEVER—FOREIGN.

Italy: Bologna, March 31 to April 6, 1 case.

Mexico: Vera Cruz, April 4 to 11, 1 death.

CHOLERA—FOREIGN.

Argentine Republic: Buenos Ayres, January 1 to 31, 27 deaths.

Japan: Hiroshima, March 29, 1 case; Moji Naval Station, March 19, 18 cases and 10 deaths. March 22, 1 death.

YOKOHAMA, JAPAN, March 29, 1895.

Sir:—I have the honor to inclose copies of official dispatches with regard to what appears to have been a slight outbreak of cholera, at the station of Moji, southern Japan. The very active measures taken by the Japanese authorities seem to have been successful in stamping out the disease, as no new cases have occurred since the 19th or 20th inst. I may say that, in the military and naval posts, not only are the regular quarantine and sanitary laws applied, but they are backed by a specially stringent code administered under the War and Navy Departments. The Japanese Government fully recognizes the imminent danger of the importation of disease with returning soldiers, sailors, and above all, through the large bodies of coolies which are employed in army transportation, and have taken such measures as seem best adapted to meet the emergency.

The danger is, undoubtedly, a grave one. Cholera is, practically, endemic; in more than one Chinese city all the maladies which so often follow in the train of war and famine are of possible occurrence, and the distance between the

[1] Bulletin Medical.

Chinese and Japanese coasts is covered in but a very few days.

I regret to say that already, through the native authorities, I have official information of the appearance of several cases of the plague at Hongkong, within the past week. The recurrence of this disease with the advancing spring has been confidently expected by all familiar with the history and laws of this malady, especially in view of the so far, very perfunctory action of the Government of Hongkong. * * * * * I am, Sir, Very respectfully,

(Signed) STUART ELDRIDGE, M.D.,
Sanitary Inspector, U. S. M-H. S.

ENCLOSURES.

FUKUOKA, March 18.

At the town of Moji, Fukuoka Ken, cases of acute vomiting and purging have appeared since the 8th inst., to the number of eighteen, with ten deaths. Careful clinical and post-mortem examinations by two able physicians, who declare the disease to be cholera. The first case had been in communication with a vessel that came from the China coast.

(Signed) GOVERNOR of Fukuoka Ken.

FUKUOKA, March 20.

There is no new case since yesterday, and disinfection and preventive measures are fully carried out.

(Signed) GOVERNOR of Fukuoka Ken.

FUKUOKA, March 21.

To-day every house has been suspected and disinfected, and there is no new case.

(Signed) ARITA, Chief of Police, Fukuoka Ken.

FUKUOKA, March 22.

There is no new case since 20th inst. One death yesterday, five remain under treatment.

(Signed) ARITA, Chief of Police, Fukuoka.

HIROSHIMA, March 29.

Yesterday cholera attacked a coolie who has worked on the transport ships at Ujina. Forty men who had been living with him, and thirty more who had communicated, are isolated and under observation.

(Signed) GOVERNOR of Hiroshima Ken.

MISCELLANY.

Change of Address.—Dr. Jas. T. Jelks, to 218 Central Avenue, Hot Springs, Ark.

The Samaritan Hospital for Women, Montreal, was opened by Her Excellency, the Countess of Aberdeen, Jan. 17, 1895.

Dr. Bayard Holmes.—Dr. Bayard Holmes has been re-appointed as Secretary of the College of Physicians and Surgeons of Chicago.

New York Ophthalmic and Aural Institute.—This institution has been named in the will of the late Mary Putnam Bull, formerly of Tarrytown, N. Y., to receive the sum of $2,000, to be applied to the sustentation account.

Professor Schnabel.—Dr. Stellwag (von Corion) late the Professor of Ophthalmology in the Faculty of Medicine, University of Vienna, has been retired on account of age. Dr. Schnabel, of Prague has been appointed to the vacancy.

Many Indorsements.—The Chicago Medical Society, the Chicago Gynecological Society and the Chicago Academy of Medicine have passed resolutions requesting Mayor Swift to retain Dr. A. R. Reynolds as Health Commissioner of Chicago. The judgment of the JOURNAL as expressed last week on this subject is thus seen to be the voice of the whole profession. Will the Mayor heed it?

The Code Question.—The Code question will not down. The premature publication of a hasty resolution passed at a poorly attended meeting of the Cleveland Medical Society has resulted in a renewal of the agitation of this subject throughout the medical press in such a way that it will force itself upon the attention of the AMERICAN MEDICAL ASSOCIATION meeting at Baltimore. It is to be hoped that this question will soon be settled, so that the valuable time of the ASSOCIATION may be better occupied in the discussion of scientific papers.—*Cleveland Medical Gazette.*

The Royal College of Physicians.—The Royal College of Physicians of London held an extraordinary comitia for the purpose of electing a President. Sir J. Russell Reynolds was re-elected. In his annual address, President Reynolds stated that "the committee appointed to carry out the decennial revision of the nomenclature of diseases had practically completed their labors, had passed the volume in proof a few days since, and it was about to be issued by the Queen's printers."

Vermiform Appendix in Hernias.—Kraft reports seven cases of hernia, in three of which the appendix alone was herniated, in the other four there was a loss of intestine in addition. After searching the literature and comparing his cases the author concludes that if the appendix is neither perforated or gangrenous it is to be reduced; in case of perforation or gangrene, resection of the appendix is indicated. The intestine if present in the hernia, whether gangrenous or not, is to be uncovered for inspection, as in all cases of gangrenous intestinal hernias.[1]

Instance of Longevity.—I was born in 1793, and since then I have never been ill a single minute," is the statement of Dr. de Bossy, the oldest of French physicians, who is still in active practice at Havre. He has never followed any special diet, and is opposed to anything of the sort. He rises at 7, summer and winter, and as soon as he is dressed starts on his rounds, usually on foot. He has drank coffee all his life, has no objection to a glass of bitters, and tobacco is "a poison which he regularly absorbs." He attributes his longevity to moderation in all things. His father lived to be 108. Dr. de Bossy took his degree in 1818, then went to England, and later to India, where he practiced medicine, and returned to Havre, where he has since been at work, sixty-four years ago. He has two sons, the elder 68 years old. —*Tribune.*

Legislation for the Prevention of Blindness in Missouri.—Several weeks ago a bill was introduced into each house of the Missouri Legislature, which contains in substance the same provisions as already exist in the laws relating to this subject in New York, Maine, Rhode Island, Minnesota, Ohio and Maryland. In Missouri the bill has passed both houses with little or no opposition; but still awaits the signature of the Governor. It would be a real misfortune to the State if he failed to adopt the advanced policy which has actuated lawmakers in so many States already, and is interesting the more intelligent leaders in still other parts of the Union. The Committee of the AMERICAN MEDICAL ASSOCIATION will make its report at the meeting in May, and we surely hope that the Governor of Missouri will not deprive his State of the privilege of being counted among those adopting this enlightened policy of the prevention of blindness from ophthalmia neonatorum.

Treatment of Strangulated Hernias.—Chalita has in the last eight years treated ninety cases of strangulated hernia in the Jewish Hospital at Kieff. If the general state of the patient is good, taxis should be tried under narcosis. It was successful in thirty-three cases after the strangulation had lasted from one to five days. If symptoms of peritonitis or collapse are present, immediate operation is necessary. The exact method to be used varies with the case. The author performed twenty herniotomies with 15 per cent. mortality; twenty-nine operations on hernias already gangrenous with resection of the intestine had 3 per cent. of deaths; three intestinal fistulas were successfully treated by the enterotome and one stercoral fistula was sutured. Herniotomy was followed in seven cases by the radical operation which is always indicated according to this author if the intestine is healthy.[2]

New Hemostatic.—Hederich recommends a new hemostatic, ferripyrin. This substance is a definite combination of perchlorid of iron and of antipyrin in the form of a reddish-orange powder, readily soluble in cold water. It has some appreciable advantages over the perchlorid. It is not

[1] Nord. Med. Arkiv.
[2] Rev. Int. de Med. et Chir. Prat.

caustic nor unpleasant to the taste and its hemostatic properties are superior to the perchlorid alone. In a case of abundant hemorrhage from a very vascular nasal myxoma, two tampons saturated with a 20 per cent. solution of ferripyrin, arrested the hemorrhage completely. It may also be used internally in doses of 0 gr. 50. According to the author it should be tried in .5 or 1 per cent. solution in gonorrhea.[1]

Wounds of the Palmar Arches.—Amitine says that hemorrhages from the palm of the hand are often grave and rebellious. Out of 150 cases collected by the author from literature, 6 died, 40 lost the power of working, 7 suffered amputation and 137 times there were grave secondary hemorrhages. Local compression, according to Reden's method, is not certain, and the author concludes that the only method guaranteeing absolute hemostasis is the old method of Antyllus—ligation of the two ends in the wound. If the tissues are infiltrated it is necessary, as recommended by Professor Kock, to expose the vessel in order to apply the ligature to healthy vessel walls. Kock in similar cases has ligated the arches in the region of the thenar eminence and at the level of the pisiform bone.[2]

The Best Illustrative Saying Regarding Sea-sickness on Record.—Bishop Potter, of New York, is said to be the sponsor for the following narrative, which so far as we can now remember may be accounted as the equal of any like illustration that has ever been published in regard to *mal de mer;* it is taken from the *Monitor:* "A gentleman on the deck of an Atlantic liner approached a lady who was lying on a bench in an evident state of abject misery, and asked her: 'Can't I do something for you?' 'No,' was the spiritless groan. 'Can't I get you something to eat?' 'No,' was breathed half inarticulately. 'Can't I get you something to drink?' 'No,' with a faint sigh. 'Well, then, can't I do something for your husband?' pointing to a gentleman stretched along the same bench with his head in her lap. She roused her last bit of energy enough to gasp out feebly: 'He is not my husband; I do not know who he is!'"

Muscular Abscesses in Typhoid Fever.—Someil (*These Paris*) concludes: 1, abscess in the muscles appearing in convalescence from typhoid fever or as a sequela is a rare complication but is not a manifestation of pyemia; 2, it is due to that alteration of the muscular fiber described by Zenker—trophic changes in some cases, inflammatory in others—which promotes rupture and hemorrhage, and the hemorrhage may occur without rupture and be caused by an arterial embolus, by arteritis or even by vaso-dilator complications; 3, the abscess then appears. In a case cited, it was due to Eberth's bacillus associated with the staphylococcus albus. The abscess should always be opened and the foyer, which may become the source of new infection thoroughly cleansed.

Medical Legislation in Minnesota.—The Legislature just adjourned has dealt generously with the medical profession of this State. The Medical Department of the State University received $40,000 for a laboratory building, making a total of $150,000 appropriated for buildings alone in a period of four years. The medical law was likewise amended, to require of all graduates of later date than 1898, "attendance upon four courses of medical lectures, in different years, of not less than six months' duration each." The provisions of this amendment will therefore exclude from practice in Minnesota, alumni of all schools, matriculating students the coming session, under the provisions of the three years' curricula. The minimum provisions of the old act required attendance upon "three courses of six months' duration each."

Partial Prostatectomy in Hypertrophied Prostate.—Pousson, of Bordeaux, says that various operative measures are used for the relief of the hypertrophied prostate—total or partial extirpation of the projecting lobes or castration, etc. He reports two cases of partial prostatectomy in order to show its value. The indications for the operation are limited, for hypertrophy of the prostate often plays but a secondary rôle in the causation of disordered micturition, which seems generally due to sclerosis of the bladder wall. Histologic examination, pathogeny and clinical experience demonstrate the diffuse lesions of the urinary passage in prostatics, and the secondary enfeeblement or even abolishment of the vesical contractility. In one of the author's cases the flow of urine was no better after the operation and the patient had still to be catheterized. The author's observations show that operating will not always remedy disordered micturition when this is developed before the operation, for one patient died on the third day of urinary complications. The cases described show the ease with which the operation can be executed and the little danger from hemorrhage, even when operated on in the congestive phase.[1]

Still "Scrapping."—It is an open secret that certain members of the medical profession, a large majority of whom live in the East, have for years been hostile to the AMERICAN MEDICAL ASSOCIATION and its JOURNAL. There is scarcely a year they do not bob up, like Banquo's ghost, with something new to raise a disturbance about, or rehash some old contention that has been previously defeated.

In the *Philadelphia Polyclinic* of March 30, we note that these gentlemen are now greatly exercised over the character of the advertisements admitted in the JOURNAL of the ASSOCIATION.

In this connection, the Philadelphia County Medical Society has passed certain resolutions in reference to the matter. It seems to us it is time for these gentlemen to understand, if they do not already understand it, that a medical journal, or any other journal, requires two prime factors for its success:

1. A solid financial basis.

2. A good editor, supported with plenty of scientific contributions.

The advertising columns of a journal are for the purpose of raising the finances with which to conduct, and improve if necessary, the literary department. Do these gentlemen suppose for a moment that the subscriptions to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION would support it and conduct it properly without these advertisements? Do they suppose for a moment that the Editor, or members of the AMERICAN MEDICAL ASSOCIATION, are to be held responsible for what is advertised in its columns? Are they willing to put up the money necessary to run a journal of this character as it should be run, and exclude these advertisements? In our opinion, the Editor and Board of Trustees should be held responsible for the character of that which enters the scientific department, and should be given the privilege of selling their advertising space for the highest price they can procure from any responsible buyer (excepting quacks), with the distinct understanding that neither the Editor, the Trustees nor the ASSOCIATION shall be responsible for what is advertised, beyond the collection of the amount necessary to pay for the advertisement.

The *British Medical Journal* is perhaps the most successful medical journal in the world, and why? Because it has a large and paying advertising patronage, in addition to a large subscription list. We have before us their March 25 issue, and we find it contains seventy-two pages of advertisements and fifty-six pages of reading matter. In these seventy-two pages of advertisements we find all manner and classes of proprietary medicine represented, from "Stower's Lime Juice" to "Bishop's Effervescent Preparations," from "Humanized Milk," to "Vinolia Soap," and from "Huxley's Improved Patent Trusses" to "Cactina Pillets."

If the ideas of these gentlemen are carried out, the income of the JOURNAL will be greatly interfered with, and we are quite sure if they are called upon to make up the deficiency that they will be among the first to condemn the Trustees and Editor for incompetency in the financial management

[1] Jour. de Med. de Paris.
[2] Jour. de Med. et Chir. Prat.

[1] Rev. Int. Med. et Chir.

of the JOURNAL, and the last to put their hands in their pockets and pay their *pro rata* of the shortage.

We believe in conducting the JOURNAL on strictly business principles, and in making its scientific department equal to that of any journal published in the world. In order to do this, however, you must give your Trustees the privilege of conducting its finances in a business-like manner, and your Editor the power to use to the best advantage for the improvement of its scientific department such appropriations as may be assigned him by the Board of Trustees.—*Columbus Medical Journal.*

Society Notes.

AT the annual meeting of the Northwestern Wisconsin Medical Association held at Stevens' Point, the following officers were elected: President, W. N. Daniels, Mosinee; Vice-President, D. L. Sauerhering, Wausau; Secretary and Treasurer, F. R. Zeit, Medford.——The Hartford County Medical Society held a regular meeting in Hartford, Conn., April 17.

Philadelphia Notes.

THE PHILADELPHIA MEDICAL CLUB gave a reception to Prof. J. M. DaCosta, on April 26, at the Hotel Bellevue, which was so largely attended as to be of the nature of an ovation. Professor DaCosta has fully regained his health, after several months illness, and expects to sail for Europe in June.

THE SEMI-ANNUAL CONVERSATIONAL MEETING of the Philadelphia Pathological Society was held April 25, when Professor George Dock of the University of Michigan, by invitation, delivered an address on "Trichomonas as a Parasite of Man." As the guest of the Society, Professor Dock was tendered a reception at the University Club after the lecture.

Hospital Notes.

THE county hospital which burned at Arville, N. Dak., some time ago will be rebuilt during the summer at a cost not to exceed $7,000. The location will be changed to Grand Forks, N. Dak.

Louisville Notes.

THE STATE BOARD OF HEALTH held its annual meeting in the parlors of the Galt House on the 16th inst., with the following members present: J. M. Mathews, President; J. N. McCormack, Secretary; Wm. Bailey, Arch-Dixon, Beeler and McReynolds. The President submitted his yearly report, in which he made several suggestions for the consideration of the board. The efficiency of the Health Department of Louisville was commended, and he deplored the fact that it was impossible to obtain the passage of an ordinance by the city council in reference to the reporting of diphtheria and other contagious diseases and the proper placarding of houses containing them. He solicited the support of the board in the establishment of a Department of Public Health by the Government. He paid a tribute to Dr. Wm. Bailey, one of their number who is President of the American Public Health Association. He recommended the passage of a similar law to that recently passed in Iowa, regulating the sale of patent medicines, and requiring that the formula be placed on every bottle, and condemned the practice so prevalent of child insurance.

The Secretary's report was read and received. It was resolved to appoint a bacteriologist for the State, whose duties will be especially to examine material taken from suspected diphtheritic throats. Tubes similiar to those used in New York city will be used and furnished free by the board. A reliable supply of antitoxin serum will also be obtained and furnished physicians of the State at the lowest possible cost.

Dr. J. L. Long submitted a report of his trip to Princeton, where he found four cases of smallpox and three of varioloid.

The Board then granted a certificate to practice to Dr. D. C. Ayers, of McLane County, re-considering their previous action upon the recommendation of their attorney, though done so with reluctance. Dr. W. S. Dixon, of Boyd County, was cited to appear before the board to show why a certificate should be given him. Certificates were refused J. A. Hurst, of Pennington Gap, Va., and G. P. Tilford, of Hopkins County, after an examination, and the following were given certificates: Drs. Bullock, Barren County; Kell, Stout, Perry County; Sullivan and Sproul. The case of Dr. J. A. Caldwell, of Lexington was heard and a certificate refused him. He will appeal his case to the courts.

ACADEMY OF MEDICINE.—The annual election of officers will be held at the next meeting, the first Monday in May.

AMERICAN MEDICAL ASSOCIATION.—Among those who will attend the Baltimore meeting may be mentioned, Dr. J. M. Mathews, W. H. Wathen, W. L. Rodman, H. H. Grant, W. Carroll Chapman, L. S. McMurtry, and Dudley S. Reynolds

THE PUBLIC SERVICES.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from April 13, 1895, to April 19, 1895.

Capt. RUDOLPH G. EBERT, Asst. Surgeon, is granted leave of absence for two months, to take effect on being relieved from duty at Ft. Huachuca, Ariz.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending April 20, 1895.

P. A. Surgeon G. MCC. PICKRELL, detached from U. S. S. "Newark," home, and two months' leave.

Asst. Surgeon L. R. STONE, ordered to the U. S. S. "Newark."

P. A. Surgeon C. H. T. LOWNDES, detached from coast survey steamer "Hassler," and to Mare Island Hospital.

Asst. Surgeon C. M. DE VALIN, detached from U. S. S. "Vesuvius," and to the U. S. S. "Vermont."

Surgeon HOWARD SMITH, retired, leave extended six months, to remain out of the United States.

Marine-Hospital Changes. Official list of changes of stations and duties of medical officers of the U. S. Marine-Hospital Service, for the fifteen days ended April 15, 1895.

Surgeon GEORGE PURVIANCE, detailed as chairman of retiring board for physical examination of officers of revenue cutter service, April 8, 1895.

Surgeon H. W. AUSTIN, detailed as member of retiring board for physical examination of officers of revenue cutter service, April 8, 1895.

Surgeon H. R. CARTER, detailed as recorder of retiring board for physical examination of officers of revenue cutter service, April 8, 1895.

P. A. Surgeon A. H. GLENNAN, granted leave of absence for three days, April 9, 1895.

P. A. Surgeon J. B. STONER, when relieved, to proceed to Philadelphia, Pa., for duty, April 5, 1895.

P. A. Surgeon G. M. GUITERAS, granted leave of absence for six days, April 5 and 8, 1895.

P. A. Surgeon J. C. PERRY, to proceed to Portland, Ore., and assume command of Service, April 5, 1895.

P. A. Surgeon J. M. EAGER, to proceed to Gulf Quarantine Station for temporary duty, April 5, 1895.

Asst. Surgeon W. J. S. STEWART, to proceed to Philadelphia, Pa., for temporary duty, April 9, 1895.

Asst. Surgeon SEATON NORMAN, to proceed to Norfolk, Va., for temporary duty, April 9, 1895.

Asst. Surgeon H. S. CUMMING, to proceed to Boston, Mass., for temporary duty, April 9, 1895.

LETTERS RECEIVED.

Alden, C. H., Washington, D. C.; Antikamnia Chemical Co., St. Louis, Mo.; Ayer, N. W. & Son, Philadelphia, Pa.; Anderson, Willis S., Detroit, Mich; Atkinson, Wm. B., Philadelphia, Pa.; Ashmead, A. S., New York.

Margner, Wm. T., Hamilton, Ohio; Berens, Conrad, Philadelphia, Pa.

Conner, J. J., Pana, Ill.; Cokenower, J. W., Des Moines, Iowa; Cokenower, J. W., Creston, Iowa; Canfield, Wm. B., Baltimore, Md.; Cerna, David, Galveston, Tex.

Douglas, Richard, Nashville, Tenn.; Delanp, S. P., New Orleans, La.; Doliber-Goodale Co., Boston, Mass.; Dahlstadt, N. G., Paxton, Ill.

Elliott, A. R., New York, N. Y.

Ferguson, M. B., Winnipeg, Man.; Ford, Chas., New York, N. Y.; French, Pius, St. Louis, Mo.; Fuller, C. H. Adv. Agency, New York, N. Y.; Fermier, Pierre, Weisburg, Ind.

Griswold, R. W., Bay City, Mich.

Hagler, E. E., Springfield, Ill.; Hillis, R. J., Altoona, Pa.; Hummel, A L., Philadelphia, Pa., (2); Herald Despatch Co., Decatur, Ill.; Hart, Mary J., Detroit, Mich.; Hartranft, Rufus C., Philadelphia, Pa.

Jelks, J. T., Hot Springs, Ark.; Jordan, J. R., Mobile, Ala.; Jones, W. S., Camden, N. J.; Jenkins, Ralph, Washington, D. C.; Jordan, J. R., Montgomery, Ala.

Keener, W. T., Chicago, Ill.

Leedom, Chas., Philadelphia, Pa.; Lord & Thomas, Chicago, Ill.; Lehn & Fink, New York, N. Y.; Lentz, Chas. & Sons, Philadelphia, Pa.; Lillie, Park, Sterling, Ill.; Loeb, Hanau W., St. Louis, Mo.

Miller, J. H., Pana, Ill.; Mann, E. C., New York, N. Y., (2); McIntyre, A. D., Albuquerque, N. M.; Morse, Lyman D. Adv. Agency, New York, N. Y.; Maxwell, W. E., Portland, Ore.; Mays, Thos. J., Philadelphia, Pa.

New England Vaccine Co., Boston, Mass.

Peck, George, Elizabeth, N. J.; Pantagraph Printing & Stationery Co., Bloomington, Ill.; Palmer, E. R., Louisville, Ky.; Patterson, M. F., Chicago, Ill.

Rio Chemical Co., St. Louis, Mo.; Rochelle, W. F., Jackson, Tenn.; Robertson, E. B., Jackson, Cal.

Schieffelin, W. H. & Co., New York, N. Y., (2); Smith, Q. C., Austin, Texas; Stork, C. Warner, Baltimore, Md.; Sellman, Wm. A. B., Baltimore. Treat, E. B., New York, N. Y.; Thorp, D. D., Lansing, Mich.

Vaughan, G. T., Philadelphia, Pa.

Wiggin, J. L., East St. Louis, Ill.; Woman's Medical College, New York, N. Y.; Western Pennsylvania Medical College, Pittsburg, Pa.; Wood, John S., Collinwood, Ohio.